

Speaker 1: Bulletproof Radio. A stage of high performance.

Dave Asprey: You're listening to Bulletproof Radio with Dave Asprey. Today's cool fact of the day is that food scientists and pharmaceutical scientists have put together something interesting. They looked at what silk worms do when they make cocoons, and they figured out that they can do on a microscopic level these nano cocoons, basically of something called nanofibrils. They can use these to package drugs, or potentially even things like nutraceuticals, into a new delivery system.

As you know, it's not necessarily about whether you put something in your mouth, it's about whether your body absorbs it, so kind of cool. It's given us some ideas for new Bulletproof supplements, but more importantly, this is going to change a lot of things, because right now, if you have to inject something, you're probably never going to do it, but if you can get it orally, it opens up a whole new realm of biohacking for you, so kind of a cool fact of the day. Before we get into today's show, I want to talk about a supplement that came about directly as a result of my work in Headstrong. It's called Forbose.

Forbose is a new way of helping your body recycle ATP. You might know, if you listen to one of these episodes, that ATP is the main energy molecule that your body uses. You take food and air and you make energy using ATP. The problem is that if that process fails a little bit, you make something called AMP, which is very hard for your body to manufacture, but then you have to pee out your AMP. When you take Forbose, it has ingredients in it, these are natural herbs and a natural type of sugar that doesn't raise your blood sugar, and that combination can actually help your body rescue this expensive molecule so you can put it back into production to keep your batteries charged, which is a cool hack.

It's something that I do every single day, and especially when I'm going to travel or exercise. It's called Forbose, and it's one of the many ways that you can go about upgrading your mitochondrial function. That's a cool hack, and if you haven't tried it, you didn't catch that section in Headstrong, that's okay. Bulletproof.com, Forbose.

All right. Today's episode is going to be fantastic, and it's something that I'm really pleased to be able to do. Not only am I interviewing the one and only Dr. Mercola, but we're doing it live in the studio here on Vancouver Island.

Dr. Mercola: [crosstalk]

Dave Asprey: Dr. Mercola, thanks for coming up to the island.

Dr. Mercola: Well, it's a great privilege and honor to see your Bulletproof lab.

Dave Asprey: I was pretty amazed when I found out you were going to be in the area and have a chance to come by. You may remember, Dr. Mercola's been on Bulletproof Radio before, but if you maybe don't have an internet account, you might not have seen him, but over the last 20 years, Dr. Mercola has become the number one online source for health information, in terms of traffic and just in terms of impact. For 20 years, he's been pioneering for things like vitamin D, the effect of sunlight on health, vitamins, nutrition, the importance of grass-fed things, the importance of eating your vegetables, and interviewing some of the world's top people. I've learned a lot from him, and he's here in the studio with us.

Dr. Mercola: Yeah, also exposing corporate corruption, which is responsible for the misinformation and massive misinformation that confuses people and causes them to make the wrong choices.

Dave Asprey: In fact, you are one of the leading voices in the anti-glyphosate community, and I'm right there with you. We've got to stop spraying poison on our soils. Your site has been really instrumental because you've published the original research, like, "Hey, here's who's paying for what, here's what's going on," so to have been out there fighting the good fight for 20 years has taught you a thing or two, and I think Bulletproof Radio listeners are going to learn a lot in this interview.

Dr. Mercola: Yes, indeed.

Dave Asprey: The other thing is you just published an amazing book about fact, called Fat for Fuel, and this came out about the same time as Headstrong. You and I are so in alignment that I'll tell you, if you liked Headstrong and you haven't read Dr. Mercola's book from his last interview, you really need to pick up Fat for Fuel. There's a lot of good information in there. It's not the same as what's in Headstrong, but it's all complimentary.

We both see the world with the same basic principles, different lenses. I learned stuff from reading this book, and you will too. It's Fat for Fuel.

Dr. Mercola: Thank you.

Dave Asprey: All right. Let's see. There's so many things that I could say about you. Three New York Times Best Sellers and effortless humor.

Dr. Mercola: Should've been four.

Dave Asprey: Let's talk about that. I think you sold more copies of Fat for Fuel than I did of Headstrong.

Dr. Mercola: Yeah, we were the number one nonfiction book sold in the last week of May-

Dave Asprey: Wow.

Dr. Mercola: ... on USA Today and Wall Street Journal.

Dave Asprey: You didn't hit the New York Times Best Seller?

Dr. Mercola: We didn't not just hit the list, we [inaudible] the top 15. They excluded us.

Dave Asprey: That's so weird.

Dr. Mercola: Yeah. Supposedly we sold too many books through Amazon, which is really hard to understand, but that's what they-

Dave Asprey: You wanted to sell books through Amazon.

Dr. Mercola: Yeah. Go figure.

Dave Asprey: It's kind of random.

Dr. Mercola: It's okay. It is what it is. The book got out there, we sold a lot of copies, and we're just excited to give people the basic foundation information that they can use to change your health, because we know it's all about fueling the mitochondria.

Dave Asprey: It is. When you peel away the onion, we say, "Oh, it's neurotransmitters, or it's this, or it's dieting," or whatever, it all boils down to energy.

Dr. Mercola: It does, and that's what I love about your work, is that you recognize it's not just food, because I just came back from a low carb conference and everyone there is just food, food, food. I talked in an hour presentation, I talked about five minutes about food and 55 minutes about the other biohacks you can use to improve mitochondria function.

Dave Asprey: Yeah. You can suck food into yourselves and turn it into energy instead of fat better if you do these other environmental variables.

Dr. Mercola: Absolutely. Yeah.

Dave Asprey: The reason that I wanted to do a second interview with you was because I want to talk about that. Rather than talking about the [violet ketosis] where we're both in alignment with that, but I want to talk specifically about electromagnetic frequencies. You've also been one of the leading voices going back a long time saying this is where [crosstalk].

Dr. Mercola: At least exposing it, but not into the depth that I'm going to be. I think that's my next book.

Dave Asprey: Nice.

Dr. Mercola: I'm pretty confident of that, and it's going to take a year. I really want to do a good job with it, is have it peer-reviewed. I'll find it and identify the leading researchers in the world who understand the truth and are not corrupted by the industry, and then convert that information into language as you see it, and understand and doable and practical recommendations.

Dave Asprey: Yeah. It's really important because there are so many people who say, "Well, if it doesn't cook your tissues, then nothing happens," which, frankly, isn't a very scientific thing to say. You could say we don't know what happens if we're not cooking your tissues, but maybe there's something because there appears to be evidence. In fact, there's overwhelming evidence of harm, it's just not short-term harm, it's long-term harm, right?

Dr. Mercola: Well, sometimes it can be short.

Dave Asprey: There's short-term?

Dr. Mercola: Yeah.

Dave Asprey: Fair point

Dr. Mercola: Absolutely, yes. Depending on your condition, clearly can be short-term.

Dave Asprey: You've been looking at EMF's, I've been looking at EMF's. You've brought your EMF meter up here. We've been playing around, before recording the show, and unfortunately, we didn't record how much EMF was coming off all the studio gear here, but hopefully not too bad because everything is wired by design, which I think is most-

Dr. Mercola: It really is a solution, or a big part of the solution, is to wire it. Wire yourself and stop the Wi-Fi. That's just probably, in reality, the single most significant exposure people have, other than their cell phone. I mean, this is going to be remembered in the future as similar to someone who's chain-smoking. I mean, the damage is probably worse from this than chain-smoking.

Dave Asprey: Holding a phone up to your head is just not a good idea.

Dr. Mercola: It's not even recommended by the manufacturers. Every manufacture says hold it at least an inch or two away, which is far too close still, but at least even they admit that. No one recommends you should hold it to your head.

Dave Asprey: Unless it's in a virtual reality googles you glue to your face.

Dr. Mercola: That's true.

Dave Asprey: That's a little scary.

Dr. Mercola: Yeah.

Dave Asprey: I will admit, I do have an Oculus Rift.

Dr. Mercola: Yeah, so do I.

Dave Asprey: Oh, do you?

Dr. Mercola: Yeah.

Dave Asprey: Okay. You get the-

Dr. Mercola: I haven't used it. I've had it for a year and I still haven't used it. I haven't had to free time to use it.

Dave Asprey: It took me six months to use mine because of lack of free time. Elliot, fortunately, ordered the machine and I did play it four times. It does have too much blue light. I did manage to fit my true dark glasses underneath it, as I was looking particularly dumb, but playing a 3D space game when you can't see certain blue colors, the aliens handed my ass to me, but man, it was fun. Dr. Mercola, you got to try it.

Dr. Mercola: Oh, I know. I've used the gear, a sense the Galaxy Gear, which is similar, but I-

Dave Asprey: It's not wired in. The Oculus Rift is cool because it has a wire.

Dr. Mercola: Right. It's not wired. Right.

Dave Asprey: You're still getting the EMF, but it's not a wireless transmitter stuck to your face, which is what's scary to me.

Dr. Mercola: Yeah. Yeah, that's a good point.

Dave Asprey: Let's talk, because one of the things that got me all excited when I heard you're going to come up here is we got on the phone and you talked about a hack that you've been doing with hydrogen. Can you talk about hydrogen in EMF?

Dr. Mercola: I could, but that would be meaningless without explaining the problems with EMF.

Dave Asprey: All right. Let's go down the EMF.

Dr. Mercola: Yeah, that's more important, I think, to understand that. I don't know that we can do both in the context. We might be able to squeeze it in, but there really is

a lot of baseline information that's so crucial, and I'm going to be presenting this at your Bulletproof Conference.

Dave Asprey: Oh, that's a good point. We should bring that up. Dr. Mercola is one of our keynote speakers, October 13th through 15th, 2017, at the Bulletproof Conference. We're getting a mini, mini preview of a lot of the stuff you're going to talk about, but I wanted you to pick this up because so many people, the skeptical, angry kind of people who say, "Oh, that can't be, therefore you're an idiot," that sort of anti-science personal attack stuff, there's a lot of that around EMF's. Maybe 20 years ago, you could make an argument that it was only about heat.

At this point, there is overwhelming evidence that there are problems. I've got one of the guys who's been working on this for a very long time here in the studio to share information with you about the specific EMF problems. Let's just go through the different things you've identified as you've been going through this.

Dr. Mercola: Sure. Glad to, but before I do that, two things. One, I've never had this product before and they didn't ask me to say this, but this is great stuff.

Dave Asprey: Oh, the Fat Water?

Dr. Mercola: Fat Water, man, I love this stuff.

Dave Asprey: Thank you.

Dr. Mercola: It's good. I've never had it, and today was the first day I had it. Second things is just a touch back on the ketosis, I just came back from a low carb conference in Southern California, and a lot of the big leaders were there and it really was extraordinary to me that the vast majority of almost all of them actually believe that you should be in strict ketosis all the time, which is just ... We're some of the only people out there teaching that. It needs to be cyclical and pulsed, or the new term now that I learned is targeted, which means that-

Dave Asprey: Interesting.

Dr. Mercola: Yeah, I think that's more precise. You know, it's always in the language. Cyclical means you could do it every three days and not actually focus and time it when you're strength training, which is when you want to have that peak, that anabolic stimulus, so just a point on that. Let's go back to EMF. I've known about EMF for a long time.

You talked about heating. In the literature, it's simply called thermal. The vast majority of the radiation we're exposed to is microwave radiation, and yes, that is your microwave oven. It was interestingly developed in World War II from the radars.

The first microwave oven was a manner Radarange, then it had marketing, figured this wasn't good, people didn't like that, and then they made it the microwave. Just cutoff the radar, and so it sounded better and they sold a lot more. I'm going to talk about the mechanism, and hopefully after I finish, you will implement one of the first recommendations, which is if you have a microwave, which, odds are, 99% of the chance, if you're watching this, you have one, is to take it out and replace it. I'm not saying you shouldn't heat your food.

There's a time and a place to heat your food, no question, get a steam convection oven, and it will work just as rapidly and safely, because when you turn that microwave oven on, there will not be enough thermal leakage to cause to heat your tissue. I'm confident of that, but what it will do is expose you to very dangerous microwave radiations at levels that are far in excess of your cell phone. Every time you turn it on, you're blasting you and your family. You do not want to do it. Just remove it from your environment.

Dave Asprey: Cuisinart makes a convection steam oven that's incredibly affordable. It's like a little toaster oven, it'll fit in that same slot, and it works great.

Dr. Mercola: Yeah, that's your goal. If you're going to use sweet potatoes, which is my favorite for targeted ketosis, I love sweet potatoes, that's the best way to do it is to steam them.

Dave Asprey: Yep.

Dr. Mercola: Yeah, and you can do it so easy in a steam convection oven. Getting back to the microwaves, this was developed, and the military knew about this, and there's actually been four major reports that were published since 1950. I think the first big one was in 1971, the Navel Research Report, and there was three others since then, the documenting this stuff, that there is damage. They've done correlations, they've done studies, and there is clear damage from it, yet the industry persist in saying there is no thermal damage.

What the heck does that mean? Because I've known that for a long time. I've known it for over 10, maybe 15 years, and I've written about it, but some of the first papers that were written on it [inaudible] it's not thermal, that's not a thermal thing. They're saying it's thermal, it's not, but we don't know what it is. Now we know what it is, and that's [crosstalk].

Dave Asprey: What the damage is? Okay.

Dr. Mercola: Exactly what it is. Once you understand what it is, the beauty of it is that you can remediate it. If you just know it's not thermal, then it's like philosophical. Who cares?

Dave Asprey: There's something else to point out. We're not saying you should never use any wireless device because they make your life really good.

Dr. Mercola: Absolutely. I still use them, but there's ways that you compensate.

Dave Asprey: Yes.

Dr. Mercola: Yes. When I use my wireless device, it's actually over there, and we may, I know we probably won't, I should've brought it here first, is the selfie stick. I only use a speakerphone, not a wired headset. I use speakerphone and I put it three feet away from my body.

Dave Asprey: Nice.

Dr. Mercola: Even then, you're still getting significant radiation, but it's 90% less. I'm not guessing, I've measured it. It's a little bit hard to measure. What makes this radiation so dangerous is that it's not a static and steady radiation, it's pulsed, which, biologically, magnifies the damage that it does when you pulse it. When you have a meter, it's spiking all the time, it's never steady level, but you can get a range and average it in your head.

Dave Asprey: Okay.

Dr. Mercola: We were talking-

Dave Asprey: We were talking-

Dr. Mercola: Oh, the thermal. I wanted to-

Dave Asprey: The thermal, right.

Dr. Mercola: ... get thermal. By thermal, the way your microwave oven works, this is important to know, is that it interacts with charged particles that are in the food, or the tissue that's being heated up, and in our case, it's our brain typically, and it moves them and it vibrates. During this vibration, because your microwave typically is about a few gigahertz, which is about the same frequency that your cell phone operates at, so that's why they're both microwave radiation. The energy produced by your cell phone is a lot less. I mean, orders and magnitude less than your microwave oven.

Now, it's certainly in the oven, but even the leakage outside. There's no question that the leakage from a microwave oven and your cell phone does not cause thermal damage, just like the experts say, but they what they fail, they fail miserably on steroids, to state is that there are not any biological damage. There's massive biological damage and this is where I'm going to explain. This is the key.

I didn't figure this out, and I'm actually interviewing him tomorrow, this guy should win the Nobel Prize, and I encourage you to have him on your podcast, too.

Dave Asprey: I will.

Dr. Mercola: His name is Dr. Martin Pall, P-A-L-L. If you just type in his name and EMF on YouTube, you'll see many lectures he's given, and he'll go to it in far greater detail, maybe even explain it a lot better than I am, but I'm going to try to consolidate one of my talents, is to convert it to regular language. He's an incredible research scientist, but there have been many studies hundreds of studies that show when you are exposed to EMF radiation, you will increase intracellular calcium. Why is that important?

First of all, the calcium is really relatively low inside yourself compared to outside. When it comes in, it has a very important biological function. It's an incredible signal, signor, so when you get calcium in there, it signals different things and you need that. You have to have that.

That's normal. That's healthy. You need calcium, but when you're exposed to EMF and you get a lot more, we've known this. What we didn't know was the mechanism of how that happens.

Dave Asprey: Oh.

Dr. Mercola: Dr. Pall figured it out.

Dave Asprey: That is the Nobel Prize territory.

Dr. Mercola: I'm telling you, in my view, I don't say this lightly. I mean, I know a lot of researchers, there's not many I would recommend to get a Nobel Prize, Seyfried might be one of them, too, who were actually in the Fat for Fuel book, where we're donating the proceeds from that project to fund his research for a million dollars to continue the effort. Dr. Pall didn't do the initial research, the bench research, but he compiled over two-dozen studies that used calcium channel blockers on in vitro studies and in small animals, and then measured the damage from the EMF exposure, and it was virtually nothing.

Dave Asprey: Wow.

Dr. Mercola: Virtually nothing. He did this announcement in 2012, published in 2013, Dave, that's only four years ago.

Dave Asprey: What happened?

Dr. Mercola: Virtually no one knows about this.

Dave Asprey: Wow.

Dr. Mercola: This was a landmark paper and it won some awards, and stuff, and I'm hoping he gets a Nobel Prize for it because it really is foundational. It provides the foundational basis to argue against the existing safety standards. That's why this is so important. I'm just trying to lay the background.

Dave Asprey: The study found in animals, you said no damage?

Dr. Mercola: Virtually no damage.

Dave Asprey: From?

Dr. Mercola: From exposure to EMF's.

Dave Asprey: Okay.

Dr. Mercola: Yeah. Mostly that was in vitro. There's very few animal studies and it hasn't been done in humans. Actually, when I interview him tomorrow, I'm going to coordinate a research protocol to establish what I believe may be one of the ways to mitigate the answers.

Dave Asprey: Okay. How was it that he was finding no damage from EMF in these things?

Dr. Mercola: The calcium channels blocked it.

Dave Asprey: Because he inflicts the calcium channels?

Dr. Mercola: He blocked the calcium channels.

Dave Asprey: This is pharmaceutical?

Dr. Mercola: Pharmaceutical, yes.

Dave Asprey: Okay. Calcium channel blockers are heart disease medications, right?

Dr. Mercola: Yes, and they work by blocking these calcium channels because that's how they work. They have the side effect of also lowering the damage that EMF does.

Dave Asprey: The EMFs are causing excess calcium.

Dr. Mercola: Yes.

Dave Asprey: You take a drug that prevents excess calcium and the damage from the EMF is mitigated?

Dr. Mercola: Excess intracellular.

Dave Asprey: Intracellular calcium.

Dr. Mercola: Yeah.

Dave Asprey: Good point. Yeah, of course.

Dr. Mercola: Very important because that's outside. It doesn't do anything to that, it's just inside the cell. What does it do? It blocks the calcium channels, and more specifically, it's called the Voltage Gated Calcium Channel, or a VGCC. Now, these are embedded in the cell membranes, and they have about 20 charged particles within them, but because they're embedded in the membrane, there's physical characteristics in [inaudible 00:19:28] and other things. This is the key that makes them not 10 times, not 20, not 100, not 1,000, not 10,000, not 100,000, but over seven million times more sensitive to EMF than the charged particles inside and out the cell that they are telling us that they are basing the safety standards on.

Dave Asprey: EMF is cooking, basically, the thing embedded in the cell membrane?

Dr. Mercola: No, it's not cooking it, it's just-

Dave Asprey: It's vibrating it.

Dr. Mercola: It's activating it.

Dave Asprey: Turning it on, okay.

Dr. Mercola: Turning it on. I'll talk about what happens, but this is important to know because you assume what it's doing, I'll tell it to you. I'm not hiding it from you, but the downstream causes the damage, but you have to understand that those voltage gated calcium channels, receptors, are seven million times more sensitive to EMF than the charge particles inside and outside the cell.

Dave Asprey: Wow.

Dr. Mercola: That means the safety standards are off by a factor of seven million. Seven million.

Dave Asprey: What does that mean? Because are we going to all unplug our Wi-Fi forever? Go back to smoke signals?

Dr. Mercola: Well, no, No, no. One of the things that I love about you is you're a tech guy. You get it. You know it. Once we understand the problem, we can develop technological solutions.

Dave Asprey: Thank you. Just if you're listening to this, I know a lot of tech entrepreneurs, a lot of VC's and all this, listen to Bulletproof Radio. Here's the deal. There is a

trillion-dollar business here replacing the global wireless infrastructure with biologic compatible wireless infrastructures.

Not like we can't do it, but once you acknowledge the problem, there's also big tobacco-style lawsuits for all the attorneys listening, go after the big Wi-Fi companies. There's big money everywhere here and it's time. The evidence is here

- Dr. Mercola: Well, and it's going to take a while for that transition to [crosstalk]. In the meantime, you need biological remediators, which we're in the process of developing.
- Dave Asprey: Yes.
- Dr. Mercola: Essentially, you do not want to take a calcium channel blocker.
- Dave Asprey: No, those are bad drugs.
- Dr. Mercola: No. I wouldn't recommend it, but if you had to and you had high blood pressure, or you had some other clinical indication for it, it might be a better choice than what somebody ... like an ace inhibitor.
- Dave Asprey: Is there a micro-dosing protocol for those? Do you want to maybe take a little bit?
- Dr. Mercola: I don't think so. No. Good question, but I think it really is a more reflection of blocking those receptors. You have to either block them or not block them, or partially block them. The more you block, let's say if you're going to be-
- Dave Asprey: Okay. What's the action rule from this? If someone's listening to this-
- Dr. Mercola: Well, let's forget the action. I didn't finish the mechanism.
- Dave Asprey: All right. Good deal.
- Dr. Mercola: You need to know the mechanism. It's really important because it actually explains how, if you understand the mechanism, how you can remediate the damage.
- Dave Asprey: Okay.
- Dr. Mercola: Once this voltage gated calcium receptor is activated or stimulated by the EMF, in less than five seconds, a million calcium ions will be streaming out of that receptor through that channel every second.
- Dave Asprey: Putting calcium into the cell?

Dr. Mercola: Into the cell.

Dave Asprey: Right.

Dr. Mercola: A million ions a second, just for one, and there's a bunch of them.

Dave Asprey: Okay.

Dr. Mercola: Okay?

Dave Asprey: We fill this stuff-

Dr. Mercola: That doesn't happen in a minute, five minutes, a week, it happens in less than five seconds. Boom! If you're exposed to something a microwave radiation cell ... What is microwave radiation? I didn't expand on this. We'll go back to mechanism.

Dave Asprey: Good point.

Dr. Mercola: Your microwave oven, obviously, we talked about, and your cell phone, obviously. Your cell phone tower, your Bluetooth headset, any Bluetooth device, any IOT, the Internets of Things, your baby monitor.

Dave Asprey: Yeah, those should be-

Dr. Mercola: Your Wi-Fi router, probably the biggest and most pernicious thing. This is going to be criminal. They're going to look back at this like we look at smoking now. A baby monitor, the most sensitive tissue, brains, they're exposing them to this Wi-Fi.

Dave Asprey: Here's the deal, you can get baby monitors that have a plug and ethernet. I did that for my babies, and it was hard to find them. You can still find them.

Dr. Mercola: Yes, they're hard to find. Less than 1%-

Dave Asprey: Yeah, just don't buy a wireless device to put in your kids room. It's not okay.

Dr. Mercola: Yeah. The internet things is coming. It's emerging. You know about that. About the year 2020, I think, is when we have a trillion IOT devices. The Smart home, your smart thermostats. Try buying a thermostat that says not a Smart thermostat.

They're becoming rare commodities. That means every time you walk by your thermostat, it's going to be activated and it starts sending these Wi-Fi signals to your router. No Wi-Fi. You want to stay away from that. When we talk about microwave-

Dave Asprey: You have no Wi-Fi at your house at all?

Dr. Mercola: I have the potential to go on, but no, I have to plug in a separate router to do that.

Dave Asprey: Yeah. I have a light switch, so when I want Wi-Fi, I flip the switch, I get Wi-Fi. When I don't want it, I turn it off.

Dr. Mercola: I want to make it harder. I want to actually have to take it out, plug it to an ethernet, and plug in the adapter.

Dave Asprey: You have to receive an electric shock before you can plug it into the wall.

Dr. Mercola: Yeah. You don't feel bad after you're just saying, "Wow, how come I didn't know this?" I was ignorant and delusional, up until a few months ago. When I gave a lecture at Dr. Clinghouse presentation, and he reminded me of how damn dangerous this stuff is and it's really foundational. Maybe even more important than diet.

Dave Asprey: It is highly important. One thing in Headstrong, I wrote about this, where I keep my cell phone, I don't keep my cell phone by my junk. That's a core Bulletproof rule because there's a lot of stuff in your organs. Men or women.

Dr. Mercola: I'll tell you why that is in a moment.

Dave Asprey: Okay, cool.

Dr. Mercola: Yeah.

Dave Asprey: I found out that right where I keep my cell phone by my right femur, my right thigh, I have 10% less bone density from just having the cell phone on in there. That's scary stuff, right?

Dr. Mercola: You shared that in one of our interviews. Thank you for that because that was in my learning phase when I was activated. Now I'm full strung.

Dave Asprey: You're really-

Dr. Mercola: I'm into this. It's my next book, as I said. I really want to understand this as best can be known and help catalyze the research to keep us safe, because I perceive it as one of the biggest threats that we have, health threats. Health threats. Let's get back to the voltage gated calcium channel. Once it's hit with the EMF, that calcium channel's going to flood in, so what does it do?

It's going to stimulate the release from at the ... well, intracellularly of nitric oxide, and then when you have increased levels of nitric oxide, it's going to combine with super oxide, which is a free radical. Nitric oxide is also a free

radical, many people don't know that. It's a beneficial free radical, which is why you want to be very, very careful taking high doses of antioxidants. Yes, antioxidants are good, but if you take too many, you can indiscriminately suppress beneficial free radicals that your-

Dave Asprey: That's exactly right.

Dr. Mercola: ... body needs. Nitric oxide would be a good example of that. You need nitric oxide. It comes in, but it doesn't keep on coming in because the voltage gated calcium channels keep ... so it goes to extraordinary high levels, or it's managed higher than it's supposed to. Combined to the super oxide, and it forms a really dangerous free nitrogen radical, or free, not radical, free nitrogen species called peroxynitrate.

Dave Asprey: Yes, one of the big, bad free radicals.

Dr. Mercola: Yeah, that's a bad one. That spins off and creates hydroxyl free radicals, which are even more dangerous. You've got all this damage, and this damage, what will it do? It will cause single and double stranded breaks in the DNA, in the mitochondria, in the nucleus. It decimates cell membranes and proteins.

I mean, it's basically accelerating aging on steroids when you have EMF.

Dave Asprey: The EMF triggers the voltage gated calcium?

Dr. Mercola: It activates them, right.

Dave Asprey: It activates it, right.

Dr. Mercola: It opens them up.

Dave Asprey: Okay. Now all the calcium flows-

Dr. Mercola: [Calciumides] fly through, yeah.

Dave Asprey: They fly through into the cell, and then what happens next is you get, you said-

Dr. Mercola: Increased nitric oxide.

Dave Asprey: ... increased nitric oxide inside the cell.

Dr. Mercola: Inside the cell, yes.

Dave Asprey: Where you don't want it.

Dr. Mercola: Well, you need-

Dave Asprey: You want a little bit, but not a lot.

Dr. Mercola: You want a little bit, not massive amounts.

Dave Asprey: Okay. Just like you need some calcium-

Dr. Mercola: Correct.

Dave Asprey: ... and not too much, so you get too much calcium, too much-

Dr. Mercola: Nitric oxide.

Dave Asprey: ... nitric oxide, and then that generates free radicals in the mitochondria.

Dr. Mercola: By combining with super oxide.

Dave Asprey: Okay, to get-

Dr. Mercola: Peroxynitrate.

Dave Asprey: Which is well-known, if you Google that stuff, that is one of the worst free radicals you can have for aging.

Dr. Mercola: Yeah, as is hydroxy free radicals.

Dave Asprey: Right.

Dr. Mercola: You got those two going on. If this VGCC, the voltage gated calcium channels are so important, where are they? Which tissues have the highest concentration of VGCC's?

Dave Asprey: I would imagine the brain, the eyes, and the heart.

Dr. Mercola: The brain. The brain. It's not been documented, and I'll actually ask Dr. Pall when I interview him tomorrow, but it would make sense.

Dave Asprey: The retina.

Dr. Mercola: The retina.

Dave Asprey: It's got to be the retina.

Dr. Mercola: Yeah. I haven't seen any literature discussing it, but I'll bet it is. Yeah, I'll bet you're right.

Dave Asprey: Yeah.

Dr. Mercola: Specifically the heart, because the heart, of course, is one of the most mitochondrial, but it's not just the heart, the cardiac tissue, it's actually the nerve tissue.

Dave Asprey: Interesting.

Dr. Mercola: What does this mean? What are the practical implications of this? There's so many practical just from this knowledge. Forget not even going to the remediation component. The practical component of this is that if ... How many people do you know that have cardiac arrhythmias?

Dave Asprey: There are a lot of them out there.

Dr. Mercola: Atrial Fib, atrial flutter, PAC's, PBC's...lots, and they're taking very dangerous drugs. Some of the most dangerous drugs we prescribe in medicine are these cardiac arrhythmics. I don't recommend them, I recommend remediating most likely one of the major causes, which is exposure to EMF. No question about it, it's going to trigger it.

I think we're seeing, maybe not an epidemic, but certainly a large increase in the amount of people with arrhythmias. If you have a cardiac arrhythmia, please, or you know someone you love or care about, please let them know about this. Have them watch this video so that they can help take care of it and remediate against it.

Dave Asprey: Here's a quick thing, and-

Dr. Mercola: Treat the cause and not the symptom. The drug is not treating the cause.

Dave Asprey: I got to say this. Dad, I know you're watching. My dad, for years, kept his cell phone in his shirt pocket right above his heart, and he had heart surgery 12 years ago, and I'm like, "Take it away! Take it away!" He finally did just last year.

Dr. Mercola: One of the worst things-

Dave Asprey: Thank you.

Dr. Mercola: One of the worst things you can do.

Dave Asprey: Yeah. Don't do that. If you carry your cell phone in your bra or your chest pocket, if that's all you took away from this thing, don't do that. Keep it away from the vital organs.

Dr. Mercola: Yeah. I live in Florida and I see a lot of women sometimes just carrying their cell phone. I stop them and I tell them. They usually carry it in the inside, or not the outside, so it stays there.

Dave Asprey: Yeah. It's right up against the tissue.

Dr. Mercola: I don't know if you know about breast cancer, but the most common cause, or the most common location, because they divide the breast into four quadrants, the most common location is the upper, outer quadrant. When it's breast cancer from a cell phone [inaudible], it's the upper, inner quadrant because that's where they're holding the cell phone.

Dave Asprey: Wow.

Dr. Mercola: Yeah. That's exactly where they're holding it. The other place, and you're right about not holding the cell phone near your testicles because the testis have a really high concentration of both those gated calcium channels. Fertility, we just wrote an article about this recently, the sperm count has dropped by 50%.

Dave Asprey: Scary.

Dr. Mercola: Yeah. There's a lot of variables. It's not just EMF, but I believe it's a very significant contribution.

Dave Asprey: It's meaningful. When you stack it with things that are xenoestrogens-

Dr. Mercola: Oh, absolutely.

Dave Asprey: ... in the environment from plastic and you stack it with things that cause mitochondrial damage, manmade toxins and things like that, then you have some pretty substantial just big problems.

Dr. Mercola: Let's talk about this side, if we talk about cardiac rhythm, is the decrease in fertility, it probably affects women's fertility. The study's a little more difficult and challenging to do in that, but it probably is a contribution, although, of course, your wife would know about that. She's been a fertility specialist. Regarding the brain, these voltage gated calcium channels also release neurotransmitters and neuroendocrine hormones.

Dave Asprey: Kind of important.

Dr. Mercola: Yeah. Just a bit. We have a massive increase in anxiety and depressive disorders, which could clearly be related to this [exposure] myth. Clearly, there's, although, a lot of other variables, sleeping and nutrition, and all the things that all don't know about this, but hardly anyone thinks about EMF exposure. Then we have this increasing epidemic, which is an absolute epidemic, no question about it, that you and I know about, is autism.

Dave Asprey: Yeah, that's a big thing.

Dr. Mercola: Yeah. EMF is not the only cause, I believe that glyphosate is a big contributor to that. Vaccines don't help, but I think if you don't have the glyphosate and EMF, they're not going to be as traumatic.

Dave Asprey: It's just like a death by a thousand cuts.

Dr. Mercola: Yeah.

Dave Asprey: Anything that's going to cause neuroinflammation where your immune system attacks itself, all of these are documented to stack on. Saying it's one cause, I think (Dr.) Mark Hyman is fond of saying if you have a thumbtack in this thumb and a thumbtack in this thumb, pulling out one thumbtack isn't going to stop you from hurting. You got to take them both out, right?

Dr. Mercola: Yeah, yeah. This case is a lot more than two thumbtacks. It's many. It's more like closer to 1,000. Those are some of the common diseases that are complications. Of course, brain tumors, we have Ted Kennedy die from a brain tumor, we've got now John McCain who will pass away probably not too long because they don't know how to treat cancer. I mean, even-

Dave Asprey: Some of us do.

Dr. Mercola: Yeah, but they don't. The conventional guys don't.

Dave Asprey: Right.

Dr. Mercola: You can't treat everyone if it's been ... especially if you had conventional therapy, it becomes really challenging. If you catch it early and you do these strategies that we recommend, you can almost always reverse. Nothings 100%, but you can get pretty close.

Dave Asprey: Yeah, a lot better than chemo.

Dr. Mercola: Yeah, or radiation.

Dave Asprey: Yeah.

Dr. Mercola: Sometimes you need them, and I'm not absolutely opposed to those, but you just got to be really careful in treating because you want to alternate your immune system that's going to fight it. If you start trashing your immune system, it's going to be a problem.

Dave Asprey: We're talking about what happens peroxynitrite into cells. Okay. Now we've got all these free radicals and it's caused all kinds of trouble. We know that having a cell phone near the brain, near the eyes, near the heart, these are the big, sensitive tissues.

Dr. Mercola: It's not just the cell phone, too, remember it's your microwave oven-

Dave Asprey: The Wi-Fi router.

Dr. Mercola: ... which is much higher. The Wi-Fi routers.

Dave Asprey: Yeah. I can tell you, we still have a microwave oven and it works really great for storing plates. We don't cook anything in it.

Dr. Mercola: Yeah, well just swap it out to steam convection.

Dave Asprey: We ought to. The steam convection's on the counter.

Dr. Mercola: Oh, okay. That's fine.

Dave Asprey: Someone's listening to this, maybe they're freaking out. They're going to pull their baby monitor and replace it with a wired one. They're realizing, "Well, my job relies on my cell phone," what are some of the other things that you can do to lower your exposure to EMF, even though you recognize your problem and you got to get rid of it.

Dr. Mercola: I think that's a good question because that is the first step. The first step is to lower your exposure. Now, we're working on some biological implementations that can remediate the damage very successfully. I'm pretty confident that ... well, the research hasn't been done yet, but we have some pretty strong clinical evidence to suggest that it will. The key thing is limit your exposure. I used to encourage people to turn their Wi-Fi off at night, and I still think that's a good strategy, but I think it's inadequate. It's [crosstalk].

Dave Asprey: It's not enough. It just helps.

Dr. Mercola: It's not enough. It helps, yeah. Why turn it off at night? Eight hours and expose yourself to 16 hours, it doesn't make sense. If you hit your hand with a hammer for 24 hours, is bad, it's less bad if you hit it for 16, but it's still best if you stop it.

Dave Asprey: I can tell you when we had our house remediated from old, and before we moved in, I had ethernet put in every single room and it cost about \$150 per ethernet drop. All right, and so there's a 24-channel switch somewhere in the house where all the ethernet comes together and that's where all the signal comes in. I can get ethernet in any room. That means I have to have the discipline to plug the device into the wall, and things like that.

Dr. Mercola: Yeah, it's a hassle, no question, but it's worth the benefit.

Dave Asprey: It is.

Dr. Mercola: Yeah. I think I've got a 48 port.

Dave Asprey: Nice.

Dr. Mercola: I've got them all over. When I moved in, I did the same strategy. It wasn't a new house, so I just had them re-retrofit. You can convert a lot of the existing wires, like if you have a lot telephone circuits, you can convert those over to ethernet cables, as you would well know.

Dave Asprey: One warning, though. There's something called power, or sorry, ethernet over power.

Dr. Mercola: Yes, EOP.

Dave Asprey: You take your power lines and use them to transmit ethernet.

Dr. Mercola: Yes.

Dave Asprey: That is not advisable because it's going to increase the variability in your power lines. It actually-

Dr. Mercola: What, does it cause dirty electricity?

Dave Asprey: Yeah, it causes dirty electricity.

Dr. Mercola: Oh, okay.

Dave Asprey: I don't know if that's a good strategy.

Dr. Mercola: Because that is one strategy that is possible that you want to avoid the expense, is you got these, I guess, devices that you would want to plug it into the router, then one plug into where you would take an ethernet.

Dave Asprey: [crosstalk]. Yeah.

Dr. Mercola: That's ethernet over power.

Dave Asprey: It's very convenient and it's better than using Wi-Fi, but it will induce the power-

Dr. Mercola: The dirty electricity.

Dave Asprey: ... power inside your walls to basically fluctuate a lot, which creates its own magnetic signal that also has an effect on yourselves.

Dr. Mercola: Which you can remediate partially with filters, capacitors.

Dave Asprey: I'm concerned the filters may take the signal out of the wire, though. I'm not sure. I've never tested it.

Dr. Mercola: That's a good question. Good point. Okay. Anyway. Thank you. Yeah, thank you for bringing that to my attention because I thought that might've been a less expensive strategy for people, but-

Dave Asprey: It's better than Wi-Fi, but not as good as just running a good old-fashioned ethernet cable.

Dr. Mercola: Yeah. It's hard to beat the wire, and I do it. I mostly have to plug my notebook in that I travel around my house with, or during my different strategies, doing the stations like seven, eight times a day, but it's okay. I don't mind it. My wifi's off. It has not been on for a month, over a month.

Dave Asprey: That's impressive.

Dr. Mercola: Yeah. What's not impressive is that I only figured this out recently. It's like boom! I'm on a mission to have people not make the mistake that I did thinking that you are somehow biologically immune to this, that just because you think you're smart or you know someone that you're not going to ... or you think you eat healthy and you're not exposed to toxins, that your biology can somehow not be impacted by this, and I want to tell you that is a delusion. An absolute delusion. You are damaging yourself.

There is no way around it unless you're immediate with some of this strategy we're going to talk about, and you might be doing them, and even not knowing it because if you don't know the mechanism, you can't remediate.

Dave Asprey: One of the things I did, I'm going to sound like a tinfoil hat-wearing guy. I've been accused of that before, it doesn't really offend me. I lived in a neighborhood with lots of Wi-Fi routers and I was working on recovering from toxic mold. I had serious brain fog.

I was doing ozone therapy that really made a difference for me, but I built my home office inside a Faraday cage inside the garage. I used aluminum sheeting, it was part of the structure for it.

Dr. Mercola: Did you measure it and so it went down to zero?

Dave Asprey: It went down to near zero.

Dr. Mercola: Okay. Perfect.

Dave Asprey: It wasn't all the way. There was a window but overall, you [crosstalk].

Dr. Mercola: What did you use?

Dave Asprey: I used aluminum backs of foil sheeting with a copper connecting all the pieces together and stainless steel tape over that.

Dr. Mercola: Excellent.

Dave Asprey: Cell phone didn't work inside, which is a pretty good sign.

Dr. Mercola: I sleep in a Faraday cage.

Dave Asprey: That's where I was going to go with this next. If I was living in a high rise, where you're just surrounded by your ... you're sleeping on top of your neighbors router, you have no control over that, I would have a Faraday cage, absolutely.

Dr. Mercola: And don't make the mistake of doing a partial Faraday cage, which means if you're in a large apartment building, if you're not on the first floor, you have the radiation coming up through your bed, so you've got to do the floor. If you live in a high rise, you've got to be aware that the signals are coming up from below you, so you have to add an additional layer of fabric. What is this fabric? It's not the aluminum foil, the copper that Dave was talking about, but it's usually copper threads.

We're actually in the process of seeking to manufacture some organic cotton canopies, but they also have silver and copper threads in there, which actually forms this metallic cage around you, and depending on the density of the metal fibers determines how effectively it's going to remediate against that.

Dave Asprey: This is really important because if you imagine a parabolic dish, like the old satellite dishes that you'd see, they receive something that bounces off it and then reflects to a central point. If you're sleeping in a half of a Faraday cage and there's a signal coming up from underneath you, it can concentrate the signal right on you.

Dr. Mercola: Good point.

Dave Asprey: That actually really matters. Here's the deal, if you sleep in a high rise with all the amazing conveniences of big-city life and there's 75 Wi-Fi signals within range of where you sleep, you should expect to sleep like crap. That's what happens, unfortunately. Dr. Mercola, you and I've written a lot about sleep hacking and improving sleep quality. EMF is a known contributor to low sleep quality.

You're going to have to do this. You're going to have to have the mysterious, sexy mid-summer nights. A shroud around your bed.

Dr. Mercola: Yeah. No mosquitoes, if they get in.

Dave Asprey: Fair point. Those New York City mosquitoes in the high rises.

Dr. Mercola: If they ever get in, or flies or whatever.

Dave Asprey: That's a fair point. It is actually how we are going to live, at least those of us who live the longest and best and are the strongest, and can afford it and have the knowledge to do it. It's just how it is.

Dr. Mercola: Yeah. They're not inexpensive.

Dave Asprey: No.

Dr. Mercola: I put one in-

Dave Asprey: They're quite expensive.

Dr. Mercola: I live in the first floor and I still put one under my bed, or under the mattress so that there's nothing coming up to me. They are probably \$1500 to \$2000 per bed.

Dave Asprey: Yeah.

Dr. Mercola: As much as some expensive mattresses.

Dave Asprey: I've never thought about this. Maybe I'll make one. I don't think I will. We're doing enough with Big Food and with the [crosstalk].

Dr. Mercola: Our take on it will be organic cotton, which is not as critical because you're not touching it, but still.

Dave Asprey: Can you make it like a sleeping bag so when I travel I'm in a hotel room?

Dr. Mercola: Yeah, once we get it set up, I'd be glad to do that for you. Yeah.

Dave Asprey: I mean, you should sell them for other people, too.

Dr. Mercola: Yeah, I should do it for myself. That's a good idea.

Dave Asprey: I would travel in a sleeping bag because-

Dr. Mercola: You heard it here, folks.

Dave Asprey: All right. I would pay a lot for that. By the way, all the road warriors who listen to this, and there's a thousand of them, I think most of us who want to feel really good, I sleep on a grounding mat when I travel.

Dr. Mercola: What am I doing now? We've got my device. I use a TES, TES-593, which is a microwave meter. I bring it with me when I travel because I don't have this-

Dave Asprey: Is that up here?

Dr. Mercola: Yeah, it is.

Dave Asprey: Can you grab that black box [crosstalk]?

Dr. Mercola: It's a black box.

Dave Asprey: TES-593. You use this before you go to sleep in a hotel room. What does it do?

Dr. Mercola: Yeah. It will tell me where I'm going to sleep. Thank you, Elliot. We're going to take this out and turn it on. It looks like there's a lot of different devices. Some of them are pretty expensive, like a few thousand dollars. This one retails for \$500, but if you just go to Google Shopping, or even Amazon, you can find it for-

Dave Asprey: Hold it up like that.

Dr. Mercola: ... can find it for \$350. A lot of people make the mistake, I mean Trifield's a very popular, but folks, please understand, Trifield meters only measure magnetic, and if you have a high magnetic exposure, as you do with from an inverter for several [inaudible] solar panels, that Faraday cage will not remediate against it because magnetic goes right through it.

Dave Asprey: Right.

Dr. Mercola: Yeah. This is up now and we are going to get a live reading in your studio.

Dave Asprey: We have Wi-Fi turned on, too.

Dr. Mercola: Yeah, this device has many different units. You have to press this one, two, three, okay, to the point where it is really pretty high. You want to go to the units of microwatts per square centimeter, which is the standard measurement of energy in the United States, and also it's actually the lowest.

Dave Asprey: What's that one point?

Dr. Mercola: Well, you're between one and two, which is pretty high.

Dave Asprey: Yeah, that's because the wifi's right over there.

Dr. Mercola: Usually I sleep, it's a .003. Yeah, but that's okay.

Dave Asprey: Not really. I work here.

Dr. Mercola: Yeah, but you got to fix this, Dave.

Dave Asprey: No, I know what it is.

Dr. Mercola: I wouldn't expose myself to that normally.

Dave Asprey: There's a switch that turns that off, we just don't have the switch off right now.

Dr. Mercola: When I go to a hotel room, I will measure which side of the bed. As I've just been traveling and slept in two hotel rooms, or two hotels different hotels in the last few days, and there was a tenfold difference between one side of the bed than the other.

Dave Asprey: Wow. You picked the side of the bed-

Dr. Mercola: I picked a side of the bed that had the least amount because you don't know where they're hiding these things. The other thing, if you're serious about this, you really need a meter, and you can give it to your friends. There's three physicians that I know, two other physicians and myself who use these. Every single one of us found hidden sources of radiation.

The other sources I neglected to mention were, earlier, your wireless mouse, your wireless keyboard, anything that's wireless, including this ring. The OURA Ring, which you and I are both fans of. If you have an OURA Ring, I know many of you do, it has to be in airplane mode. The problem, and it's a serious problem, and if you could please write the company, we need as much pressure on them as possible to fix the bug because this will spontaneously come out of airplane mode on a regular basis, multiple times during the day. It's unacceptable because it is a significant exposure.

You wouldn't know that unless you measure it, and unfortunately, most of you live in environments where the EMF is so high you can't measure because the background is so high. You have to have a low EMF environment to measure it.

Dave Asprey: Yeah. It's one of those things if you're getting a monitoring and you're not broadcasting, there's almost no EMF from the thing, which is why I like the ring, but if it accidentally turns itself on and then starts broadcasting and you don't know it, now you're sitting there where-

Dr. Mercola: It's a significant signal. Admittedly it's your hand, but if you sleep with your hand on your chest, it's a problem.

Dave Asprey: Yeah. Okay. What else could people do if they're a little concerned about this now? Is there any nutritional intervention? You can tell this helps with almost everything, but it's-

Dr. Mercola: Yes, it does.

Dave Asprey: ... not going to protect you from EMF permanently.

Dr. Mercola: No. What you want to do is improve your antioxidants. Not just any antioxidants.

Dave Asprey: Fair point, right?

Dr. Mercola: No. Ideally, you want to use one. Two ways to do it. The first, and most important, we discussed. Lower the exposure, but there's going to be exposure that you just have no control over, so what do you do then?

The cool way to do, or the interesting approach, and there's really no studies done on this yet, we're in the process of establishing them and developing the parameters, talking to Dr. Pall who's done a lot of this research to find out the best idea strategy to document this, these remediation efforts. I'm hoping within a year we'll have results of that. It appears that there's two really impressive strategies that you can use. One is simple magnesium.

Dave Asprey: Take more magnesium, you heard it here first.

Dr. Mercola: Yeah. We all know that 80% of us, the population, maybe is in deficient, so that's not a bad idea from [inaudible].

Dave Asprey: I do 800 milligrams a day now.

Dr. Mercola: I think you're going to want to increase it closer to two grams.

Dave Asprey: Without crapping myself? Is there a [crosstalk] for that?

Dr. Mercola: Oh, yeah, there's a way through that. We can talk about that, but there's a lot of different strategies.

Dave Asprey: All right. Let's talk about that. Disaster prevention magnesium. Bad idea.

Dr. Mercola: Yeah. It depends on the type of magnesium. We're doing some research in this now, some novel forms of magnesium that people may not be familiar with.

Dave Asprey: I take a big mix of types, yeah.

Dr. Mercola: Yeah, you definitely need a variety of types. You don't want to have loose stools because that's going to be counterproductive too, but if you're not having loose stools, I would just continue to increase.

Dave Asprey: Okay.

Dr. Mercola: I am confident 800's too low. It's probably closer to two grams.

Dave Asprey: For most people, 400 is considered pretty hefty, and I'm doing twice that.

Dr. Mercola: Oh, no, no. You are under-dosing.

Dave Asprey: All right.

Dr. Mercola: It's very serious.

Dave Asprey: [Crosstalk] some more.

Dr. Mercola: Yeah. You are going to see a difference.

Dave Asprey: Wow.

Dr. Mercola: Especially the other strategy I'm going to talk about now, when you travel, you're going to send me an email saying, "I can't believe the difference."

Dave Asprey: All right. This is cool.

Dr. Mercola: Yeah. Clearly magnesium, and we're looking at something called magnesium bicarbonate, which you can't buy, but you have to create in some exotic strategies, or maybe do it through another process. We're in the process of identifying grass, generally recognized as safe supplements that can be used and can be purchased without having to do some of these crazy biohacks.

Dave Asprey: You're going to talk about those at the Bulletproof Conference? How to potentially do that at home in the meantime?

Dr. Mercola: Yeah.

Dave Asprey: For that crowd?

Dr. Mercola: Okay, I will, I will.

Dave Asprey: Yeah.

Dr. Mercola: Yeah. I just found out about this two days ago.

Dave Asprey: Okay. I'm familiar this is stuff, we talked about off camera, but yeah, I was familiar with the mixing the things together.

Dr. Mercola: Yeah. I wasn't aware of that, but I think that's probably the most, and in fact, in the limited research I've read in the last few days, suggests that it's like the fountain of youth. This is stuff about magnesium bicarbonate is just beyond extraordinary. I had never been exposed to it before.

Dave Asprey: I had read this stuff a couple of years ago and did it once, but I couldn't find a good source for one of the things. I'm like, "There's so many hacks, but the research is compelling." Yeah.

Dr. Mercola: Especially when you understand it's going to help mitigate the EMF damage.

Dave Asprey: This is a big thing. I didn't know that.

Dr. Mercola: Yeah, that is huge.

Dave Asprey: If you're listening-

Dr. Mercola: I don't want to go into personal details, but I confirmed it myself over the weekend that it works, and from a biological perspective. It was a little mini test that I did unexpectedly, but at least in one of the tissues.

Dave Asprey: For when we talk about bicarbonate, you know about baking soda, which is sodium bicarbonate and it's a strong alkali, but there are other things. There's potassium bicarbonate, which is another thing that you might take some of, and something that I actually do use, and then magnesium bicarbonate, which is very hard to get as a supplement because it sucks-

Dr. Mercola: You can't buy it.

Dave Asprey: It's sucks water in and changes things, so it's not stable.

Dr. Mercola: Yeah, you cannot buy it.

Dave Asprey: Yeah.

Dr. Mercola: It's not stable, you cannot buy it. You have to create it yourself, and there's several different ways to do it. I'll be talking about it at the Bulletproof Conference, which is the reason why you need to be there! I am so excited. I have never been to the Bulletproof Conference, but I am just ramped up. I cannot wait to go.

Dave Asprey: It's really cool to have seen biohacking emerging as a field because you were doing it before it had this name and the title. What are all the things you can do, and really one of the pioneers in the field, and so to be able to pull together a group of people from different disciplines to talk about this stuff, so I think you'll definitely turns some heads with what you have to say there because I'm pretty excited. This is one of those big things.

Dr. Mercola: Yeah. Now, the other big thing that we'll explain more in depth at the conference, Dave has been gracious enough to give me two segments, so I'll have close to two hours there, which is great, is molecular hydrogen.

Dave Asprey: Yes.

Dr. Mercola: Dave has knew about this for a while. In fact, he met the leader in the field, at least in the United States, which is Tyler LaBaron, a youngster, 29-years-old, who can deadlift 450 pounds and run a 220 marathon. Yes, I did not mistake, say that incorrectly, 220.

Dave Asprey: In fact, it was Tyler ... If you subscribe to the Dave Asprey Biohacking Blogs every quarter, I put together a bunch of neat stuff you haven't heard of, I put it in a box and ship it to you. You can go to biohacked.com. That's bio H-A-C-K-E-D dotcom. You can subscribe.

You would've received some of these hydrogen tablets, I think two boxes ago, because the cutting-edge stuff, I always put it in there and you get it. You don't know what you're going to get, but it's really cool.

Dr. Mercola: It helps if you know what it is so you know how to use it.

Dave Asprey: No, I tell people how to use it, but the idea is I curate all the good stuff, and so people who are super into Bulletproof, they-

Dr. Mercola: Good idea.

Dave Asprey: Essentially, they save a couple hundred dollars. I send them \$200-300 worth of stuff for \$100 bucks, and I pick out the good stuff. That's Biohacked.com.

Dr. Mercola: That sounds like a great deal. I'm going to have to get on that list.

Dave Asprey: It's a lot of work, to be honest, but I'll send you the box, for sure. Curated in the box, but it's fun because all the toys I give-

Dr. Mercola: Yeah, yeah. That's great. That's a great thing.

Dave Asprey: There's probably 2,000 listening who know about this.

Dr. Mercola: Yeah. Or at least been exposed to, but if you haven't, Tyler LaBaron, L-A-B-A-R-O-N, just type in that and molecular hydrogen. He has his own website, molecularhydrogenfoundation.org, which is a crazy long name.

Dave Asprey: 800 studies on his website about hydrogen.

Dr. Mercola: Yeah, it's really good. Just type it in YouTube so you can listen to some of this lectures. That's where you'll get it because he's got more time than I do right here. Essentially, it is the summary, the cliff note version is that it's molecular hydrogen, which is two atoms of hydrogen, the smallest molecule in the universe that can defuse across any cell membrane, has no polarity, is a neutral molecule and gets in there instantly, is a selective, it's probably the best antioxidant known to man, it's a selective antioxidant that does ... We talked about this earlier, there's a baseline level of normal valuable important biological free radicals, and if we lower that, we are heading for trouble.

Dave Asprey: I'm sorry. There's some supplements you can take that turn off free radical production in the cells, and-

Dr. Mercola: Dangerous.

Dave Asprey: Oh, my God. You take those for two days and you want to die. You can't pick your arm up. It's horrible.

Dr. Mercola: You need free radicals.

Dave Asprey: Yeah, they're important.

Dr. Mercola: What you don't need is excessive free radicals that-

Dave Asprey: Or the wrong ones.

Dr. Mercola: Or the wrong ones. This is precisely what molecular hydrogen does, and they've done the studies. I'll show you the slide when I'm there. The baseline free radicals is here and a hydrogen at the same level, and then they expose a group of animals to high dose ionizing radiation-

Dave Asprey: Bad stuff.

Dr. Mercola: ... which can ... This is a real interesting fact, the ionizing radiation has enough energy because it is shorter waves. By itself, the energy in those waves will break the [inaudible] bonds in DNA. Cause single [dopus gender] breaks. This is a not well-known fact, is that that is not what causes the majority of the DNA breakage. What causes it?

Dave Asprey: Peroxynitrite.

Dr. Mercola: Yes. Pre-radical damage. Oxidative stress. That causes it. Actually, in most instances, now if you get a nuclear reaction exposure like Hiroshima or something, then you're going to be dead, yes. That's deadly, but in most cases, the microwave radiation exposure is more dangerous than X-rays.

Dave Asprey: Interesting.

Dr. Mercola: More dangerous than X-rays.

Dave Asprey: Because of the oxidative stress, it-

Dr. Mercola: Yes.

Dave Asprey: ... creates [crosstalk].

Dr. Mercola: It's the oxidative stress.

Dave Asprey: Because the [crosstalk].

Dr. Mercola: Let me just finish this one slide I was trying to illustrate, that I'll be showing at the conference, is they have a certain level, the level of reactive austence species goes much higher, maybe six times higher, and then when you give hydrogen, it comes down not as low as baseline levels, but it mitigates 80% of the damage. What the heck? What's the take home on this? Very valuable if you happen to fly in airplanes because ionizing radiation is also gamma rays, which you're going to hit at 35,000 feet, and I have taken a Geiger counter up, and it's like ten times higher at 35,000 than it is at ground level.

Dave Asprey: Especially during the day.

Dr. Mercola: Yeah. I didn't see a difference.

Dave Asprey: Oh, at night you don't see a difference?

Dr. Mercola: Yeah. I didn't see a difference.

Dave Asprey: Interesting.

Dr. Mercola: I did not. That's what David Wolf had said, and I said, "I'm going to test it," and it didn't was the same.

Dave Asprey: Surprising. Okay.

Dr. Mercola: Yeah. His theory is flawed. It was not true, but it's still bad. I think this is what you're going to love because you didn't know this, you're going to try this hydrogen out, it's going to make-

Dave Asprey: Yeah, I've never tried it in mid-flight.

Dr. Mercola: Yeah. Not mid-flight.

Dave Asprey: Oh, before?

Dr. Mercola: When you take hydrogen, you could actually breathe it all day long. Not a good idea. Your body makes hydrogen gas, about 10 liters a day, and so a healthy baseline, that's one of the reasons why your microbiome is so healthy because it's making hydrogen gas. When you have a steady state of exposure, you don't get the other benefits, so you want to pulse it just like we pulse it and genesis.

Dave Asprey: Right.

Dr. Mercola: Pulsing, pulsing, pulsing. That's where you get the benefit. The strategy I use now and used on my last few flights, and it's worked marvelously, I've had no side effects from travel and I flew across the country. It was just crazy. Literally over 10 hours of flying in the air.

There's a number of different ways to get it, but the most practical way for most people is going to be the hydrogen tablets. We don't sell them. We will in the future. We're going to try to have the best one out there in the market.

Everything. It's going to be grass and the highest concentration part per million, and nano bubbles, and all this stuff that we're going to be doing, but we don't have it now. Probably won't have it for a year, maybe hopefully less. As soon as you go up in the air, well, no, maybe at 5,000 feet, before the signal comes on that your wifi's on, you can turn your Wi-Fi on now, or you-

- Dave Asprey: On an airplane. That's right.
- Dr. Mercola: You can get up, you know? That's 10,000 feet. Even that time is probably okay to have a long flight. You put the tablet in a little bottle of water.
- Dave Asprey: This is like a hydrogen tablet you can buy, right?
- Dr. Mercola: Right.
- Dave Asprey: You don't sell them, I don't sell them, so we're just talking about stuff you can get online, right?
- Dr. Mercola: Yeah. You can't get them in problems or claims here.
- Dave Asprey: No commercial relationship for either one of us.
- Dr. Mercola: Yeah. We will do it in the future, but we're not doing it now. I think this is the most important supplement I take, I really do. I take it before ozone, too. I do ozone every day.
- Dave Asprey: Interesting.
- Dr. Mercola: Yeah.
- Dave Asprey: I breathe hydrogen gas for 90 minutes when I return from a flight.
- Dr. Mercola: No. I think you need to do it before, but you need to do it during the flight, so let me finish this.
- Dave Asprey: During the flights. Cool, yeah.
- Dr. Mercola: You want to put it in a little bottle, preferably with a cap, so because it's hydrogen gas, it's going to blow out, so you put it in there, not cold water because it'll slow down the reaction time, and you put it in and let the tablet dissolve completely, and then you open the cap and drink it as quickly as you can without swallowing it the wrong way.

Dave Asprey: Right, right.

Dr. Mercola: Yeah, because you want the hydrogen gas to go into your body, and it will work for about two hours. It'll literally reduce the damage from the gamma rays by about 80%. If you're a flight attendant or a pilot, this is absolutely imperative. I say about two hours, so if you get a two hour flight or a 230, it's fine, one tablet should work, but if you got anything longer, I would look at doing two tablets and put one right in the middle of the flight.

Dave Asprey: Cool. I'm going to be playing around with this. It's funny, I sent a bottle of tablets out in the Biohacking box.

Dr. Mercola: You guys can play, too.

Dave Asprey: Yeah.

Dr. Mercola: Unless you used them already.

Dave Asprey: Yeah, if you got one of those, now you know. I never thought using them during a flight.

Dr. Mercola: Yeah, that's probably one of the most important-

Dave Asprey: It's a good hack.

Dr. Mercola: Even another good one is when you hack it before and after exercise. Exercise generates reactive oxidants and species, right? Again, it's a selective antioxidant. It won't stop any of the species that are going to promote anabolic benefits of the exercise, it'll just stop the dangerous ones. It's a selective antioxidant.

This is new. The first stuff, why don't you know about this? Because the first major study that was published was in 2007, 10 years ago, almost all the literature is in Japanese. Tyler went to study it in the [Goy University 00:57:17] and learned all this stuff from the experts, that's why he's a world-class expert in the US. That's why you don't know about it. It's brand new.

Dave Asprey: Yep. You can buy hydrogen water machines all over Japan now, and you barely see them here.

Dr. Mercola: I don't recommend hydrogen water.

Dave Asprey: Yeah, I know, but it's [crosstalk].

Dr. Mercola: Because it's not the pulse, you need the pulse.

Dave Asprey: Yeah, but I'm just saying-

Dr. Mercola: They're switching. They're switching from that to having the high dose just intermittently.

Dave Asprey: I'm a fan of that. I would say get some hydrogen when you can get some hydrogen.

Dr. Mercola: Yeah. High doses, if you can.

Dave Asprey: Yeah. It's better if you can get the high dose, but what I was going to say there is if you're lifting something, right, what happens is you get the positive free radicals that are beneficial, that, say, build new muscles. At the same time, you get ones that say oxidative stress enters the world, create aging. If you can turn off the aging ones and turn on the muscle growth ones, that's cool, and that's what hydrogen gas does, which is different than, say, what a vitamin C capsule's going to do, even though vitamin C's good at quenching peroxynitrite, it quenches the good ones as well.

Dr. Mercola: Yeah. I don't recommend people taking vitamin C regularly. I think it's something, especially Liposomal C, that everyone should have in their emergency kit because I've never seen anything more effective. Taking four grams every hour, Liposomal C, because you will not get loose stools.

Dave Asprey: Yeah, or intravenous, yeah.

Dr. Mercola: Yeah, but Liposomal, it's going to be a fraction of the cost, and it sure is a lot easier.

Dave Asprey: Yeah, it doesn't raise the levels nearly as much, though.

Dr. Mercola: I think it may raise them more.

Dave Asprey: Wow. I'd be interested to see that research.

Dr. Mercola: Yeah. I think Tom Lebee's done it.

Dave Asprey: Okay, yeah, I know Tom.

Dr. Mercola: Because it goes intracellular where you need it.

Dave Asprey: Okay.

Dr. Mercola: Whereas, the other, the regular vitamin C-

Dave Asprey: Intracellular supply level shows.

Dr. Mercola: Yeah.

Dave Asprey: We don't want to get too far off that because we don't want to go down. It may be a long, interesting discussion, but another episode of the show.

Dr. Mercola: Yeah. Yeah.

Dave Asprey: The important point for listeners is just to understand free radicals are not good or bad. Bad free radicals are bad, good free radicals are good, just like bad fats are bad and good fats are good.

Dr. Mercola: Well, it's not so much bad free radicals. You need a certain baseline, so it's excessive free radicals that [crosstalk].

Dave Asprey: I don't know that any peroxynitrite is beneficial for us.

Dr. Mercola: Well, that we know of, but who knows. Maybe you need a certain baseline.

Dave Asprey: Fair point. You're not going to get rid of all of it.

Dr. Mercola: Yeah.

Dave Asprey: The idea is to change the ratio of these, just like we might change the ratio of omega six to omega three fatty acids in our diet and get a benefit by suppressing the six and increasing the threes, but not getting rid of the sixes.

Dr. Mercola: These free radicals aren't hanging around for hours, days, or weeks. They literally last a very tiny fraction of a second. That's why you have to have it there right away. It's exactly what molecular hydrogen does.

Dave Asprey: I'll definitely try one of the hydrogen tablets in water while flying.

Dr. Mercola: Well, bring a bunch, just in case.

Dave Asprey: Of course. Okay. That's a pretty cool hack.

Dr. Mercola: Yeah.

Dave Asprey: All right. Now, we've talked about that. We've talked about some ketosis is always good. We've talked about just minimizing exposure from where you carry your devices from Wi-Fi routers using more ethernet.

Anything else people listening to the show today can go home and do? We talked about Faraday cages even, but what else could you do right now?

Dr. Mercola: With respect to EMF?

Dave Asprey: Yeah.

Dr. Mercola: I think I would do the due diligence because this is so new. I would encourage and strongly encourage you to actually be an advocate for this because there's, essentially, industry conspiracy, and it really is a conspiracy. I mean, if you read the stories, it's just as bad as the drug industry, if not worse, that they're suppressing this information. Any legitimate researcher comes up is defunded and discredited.

Dave Asprey: That's a fair point, that is happening.

Dr. Mercola: This information is out now. As I said, I believe Dr. Pall should get the Nobel Prize for his work, so watch his lectures, understand it so that you can communicate this to your friends and neighbors. They don't have to die and suffer prematurely because they don't know this information, and just be an advocate for it. The other one, an important one I forgot, smart meters.

Dave Asprey: Oh, yeah. Those are [crosstalk].

Dr. Mercola: Smart meters. The same, probably worse than Wi-Fi.

Dave Asprey: Yeah. Terrible for you.

Dr. Mercola: We're recording this the first week of August, or the second week of August, so the first week of August, you go on my site, we ran a documentary about smart meters. It goes in a lot of the details and is encouraging people to band together because they have extortionaries. You can actually not have a smart meter in your house like I do, but I have to pay \$35 a month to do that. That's extortion.

Dave Asprey: Yeah, we have some fee like that, too.

Dr. Mercola: Yeah, I think they do it to everyone, and supposedly it's to justify the cost of having to send someone out. Well, that's not too bad, but I'm sure they're making extra money on it and they never charged you for it before. It was already built into the equation.

Dave Asprey: It's like charging your power company \$35 a month for not throwing rocks through their plate glass windows, right?

Dr. Mercola: Yeah, yeah. Very good analogy. Yeah, I love that. Yeah.

Dave Asprey: It doesn't make any sense to me.

Dr. Mercola: I'll bet it increases the bottom line.

Dave Asprey: Yeah, of course. I understand there are things, I don't want to send someone to your house because it's expensive, bottom line is, sorry guys, you have a monopoly, you got to do your jobs, you get paid to send people to my house

because you didn't pay me to, basically, take the hit biologically for the wireless stuff.

Dr. Mercola: It's not like their cost went up because they've been doing this since they've been providing power. This smart meter thing is a relatively new introduction for most communities.

Dave Asprey: If you acknowledge that Wi-Fi causes problems, you can engineer a smart meter that is not biologically harmful. It doesn't have to send constant usage stuff. That's all gravy. If it's going to send once a day, a daily usage thing, and some of that other stuff, it doesn't matter. It's a single pulse.

It's irrelevant. It's the constant sending of data that they're doing, and bottom line is, guys, if you're a smart meter engineer listening to this, well, you probably already turned it off because I made you mad, but that's good, or not. Here's the deal, you can fix the problem. There is such a thing as a smart meter that's not harmful. No one makes it because the demand is there, but no one's acknowledged the demand, so here's the demand. You got, what, a quarter million people listening to this, this is your demand.

Dr. Mercola: Absolutely.

Dave Asprey: We'll buy those.

Dr. Mercola: Yeah, absolutely. I don't know about the compatibility between all the different utilities, but there certainly is a need for it, there's no question. If you're an entrepreneur, you can fit that need, but I think all the message is just be an advocate. Understand this and start telling people about it. Let's start spreading the word. I think that's what we do.

I realized a long time ago that really, the way we're going to get this is not by going to the government or trying to change the law, that's not going to work. It has to come from the public. Public has to demand this and refuse to, I guess, relinquish their power to these authorities and rely on their belief that the only damage is thermal damage, and that is absolutely biologically true.

Dave Asprey: Yeah. There's a long history of changing demand in order to cause change and changing supply.

Dr. Mercola: We're doing it with organic.

Dave Asprey: Well, we're doing it with organic-

Dr. Mercola: Glyphosate, which is now poison.

Dave Asprey: Yeah. Yeah.

Dr. Mercola: We can't always allow that.

Dave Asprey: You've changed demand for stuff with Mercola.com.

Dr. Mercola: The new thing is biodynamic.

Dave Asprey: Yeah, oh, that's much better. The Sar Garden is biodynamic and so is yours, right?

Dr. Mercola: Yeah. Absolutely.

Dave Asprey: Now there's some stuff in biodynamic that's really hard for people to swallow because if you follow the full standard, you have to bury a cow's head full of poop, or something, under a full moon-

Dr. Mercola: No, no, it's actually the horn with manure. It's buried. Here's the next level, is to take that manure out and develop a compost tea out of it and then spray it all over the property.

Dave Asprey: Interesting.

Dr. Mercola: You actually spread the microbes around.

Dave Asprey: What's going on there is you could say, "Oh, that's a bunch of hippy fairy stuff," or you could say, "Oh, there's actually biological materials," and you're culturing microbes in the soil and then spreading them around, which is what's going on, so it's careful microbe management.

Dr. Mercola: It's relatively easy to do, even if you don't have a cow, you can buy these.

Dave Asprey: Yeah, it's not that hard to do, but it's funny because it has a reputation for being really out there, but it actually works for the best pot on the planet and the best wine on the planet, it's all biodynamic.

Dr. Mercola: Yeah. Imagine that.

Dave Asprey: There's a reason.

Dr. Mercola: If it didn't work, they wouldn't do it.

Dave Asprey: Right. That's what it comes down to.

Dr. Mercola: Yeah.

Dave Asprey: Well, on that note, Dr. Mercola, thank you for this episode of Bulletproof Radio. I think that there's some real actionable stuff that people can do that we talked about.

Dr. Mercola: Yeah. Try to get people actionable stuff, yeah.

Dave Asprey: You're going to get into more detail at the Bulletproof Conference, which is-

Dr. Mercola: Yes.

Dave Asprey: Which is pretty cool.

Dr. Mercola: Plan on going there, definitely go.

Dave Asprey: We're going to have eight hydrogen machines there as well, so there'll be a hydrogen stations, so-

Dr. Mercola: Oh, interesting.

Dave Asprey: ... people can start learning about hydrogen, which is super cool, and a hundred other cell exhibitors.

Dr. Mercola: Yeah, I'm really looking forward to it.

Dave Asprey: [crosstalk]

Dr. Mercola: I'm excited.

Dave Asprey: I'm looking forward to your talk because you've been really on top of this stuff for a long time, and you're going to be sharing stuff that you haven't talked about before.

Dr. Mercola: Yeah, and I'm also going to be sharing my favorite biohacks, but I'm not going to do it in the main lecture that we have. I have a 15 minute where I speak to everyone and there's a breakout session, we'll be sharing those in one of the breakouts.

Dave Asprey: Oh, I'm excited to see that. Dr. Mercola, on every episode of Bulletproof Radio, I always ask people for three things, three pieces of advice you would ... obviously someone who wants to perform better, and since you've already answered that in the last episode, people can and should hear that whole episode, what I would normally do is say three things you can do to mitigate EMF, but we already just listed those, so I think you got [crosstalk].

Dr. Mercola: Yeah. It's hard because there's so many good things. The real food, the movement, and gratitude is huge, is massively important. I mean, it's just such a good strategy. There's another interesting tool that I think would be very useful that I just encountered because my mother passed away a few weeks ago, and it was probably the biggest grief challenge I've had. We all have our parents, not all, but eventually they go.

Dave Asprey: Yeah, people die.

Dr. Mercola: Hopefully they do. People die. We all have people that we know and love pass away. There was a great book and I don't know if you've read it, it's by David Hawkins, H-A-W-K-I-N-S, MVP.

Dave Asprey: [crosstalk].

Dr. Mercola: He's written a lot of books and he passed. He was a brilliant physician and researcher. He was really into energy medicine, but this last book, before he went, was Letting Go: The Pathway to Surrender. Definite read. You've got to put it on your list.

Dave Asprey: Oh, I'll read that.

Dr. Mercola: I think it's one of the most profoundly powerful and simple tools you can use. Doesn't cost you anything but the price of the book. It's \$15. It's just a simple technique that you can do, just eloquently explain that really not just for grief, although that's a powerful one, but just about any emotion-

Dave Asprey: Expectations.

Dr. Mercola: ... and feeling that you have that's really destructive. We all know that stress is a big issue, but a lot of it, we have the tool. This gives you the tool to do that and it doesn't really cost anything.

Dave Asprey: That's called Letting Go?

Dr. Mercola: Letting Go: The Pathway to Surrender, David Hawkins, H-A-W-K-I-N-S.

Dave Asprey: All right. That is a fantastic piece of advice. I think that's the first time someone's offered a book as one of their answers to that.

Dr. Mercola: Well, because it's-

Dave Asprey: It's important.

Dr. Mercola: The stress, sure, if people say stress, but how are you going to remediate the stress?

Dave Asprey: Great. Great advice. People can pick up your latest book, which is Fact for Fuel, online, Amazon, on Mercola.com, all the other standard places you expect to find it. It's definitely worth the time to read that book. I will see you guys at the Bulletproof Conference, and again, Dr. Mercola, it's a pleasure having you over for lunch.

Dr. Mercola: Yeah, thanks for your gracious hospitality. It was wonderful to visit your labs, and I'm inspired to probably get some of the stuff that you got down here, and great to see your garden. I hear you talk about it all the time, but it was just great, and your wife, your lovely wife, Lana.

Dave Asprey: Thank you

Dr. Mercola: She's great.

Dave Asprey: Awesome. Well, we will see you all on the next episode. If you liked this episode, if you got something useful out of it, there's a couple things you can do to say thanks. One of them is you could pick up a copy of Fat for Fuel, it's worth your time to read it, and share this information. Pick up a copy of Headstrong, if you don't have it.

Something that authors, like Dr. Mercola and I, really pay attention to is online reviews. If you go to Amazon and you say, "Hey, this book was worth reading," and tell someone else, that is an active service for them and for us because we pay attention to that. It really matters, so I would be really grateful if you would, right now, pick up your phone, or your computer, or whatever it is, go to Amazon and say, "This book was worth my time," because I will know when you do that. Thank you. All right.