Hydrogen Therapy: Hydrogen's Role In Longevity And Disease Prevention Transcript

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Introduction and Hydrogen Therapy Overview

Welcome to another interview for Doctor Talks. Now, Ben Tomita is an electrical engineer. He's a homesteading. Biohacker. And the creator of the H2 Genesis molecular hydrogen generator.

Now, he found his way to, molecular hydrogen therapy. By researching anti-aging strategies. And he discovered the research, literally thousands of papers that use molecular hydrogen to treat a wide variety of, conditions affecting the brain, the heart, the eyes and literally every organ in the body.

Because hydrogen turns out to be super helpful for restoring, the aging mitochondria. Now, his mission now is to bring the powerful benefits of hydrogen therapy to as many people as possible.

And because mitochondria is a driver of disability for Ms.. I'm really looking forward to this, amazing interview. Okay, Ben, I'm really glad to have you here.

You have a very interesting perspective. Coming from the bio engineering background, and so I think we could start with, what is bioengineering? And then we can go on to how that leads you.

LED you into biohacking, right? You know, bioengineering. I'm not. I don't use that term so much. I mean, I'm, you know, come from a different perspective.

You know, we call biohacking what I do. And I've got involved with, hydrogen therapy through different research and experiments I've been doing. And so that a lot of the first question people ask, well, what is hydrogen therapy?

And so to define that at the moment to so we know what people what for people to know what we're talking about. Right. Hydrogen therapy is the administration of hydrogen gas into the body through inhalation or drinking.

Hydrogen infused water or diffusing the hydrogen gas through into the skin, for the purpose of better and faster healing and overall, you know, general health.

And so the three methods we just talked about is neo cannula, which some people, you know, call oxygen. The machine generates, hydrogen gas, which you inhale through your nose.

That's the first method of, you know, how is your therapy for, administering the treatment? The other is, diffusing the gas into water. So the gas would come out of a, er, stone like this, put in a glass of water and the gas dissolves, you know, a portion of the gas dissolves into the water.

And the third method is, of the hydrogen therapy is, using a bag or a sleeve to in case your joints, whether we say your, your elbow, your shoulder, your knees, your hands and engulfing that joint, in most cases, that's what you use for, so the gas diffuses into those joints for, much faster healing.

And I can give examples of that type of healing, you know, so we get on, you know, with a presentation here, but, Yeah.

Ben Tomita's Biohacking Background

Okay. So so hang on. So for our listeners, we're taking hydrogen gas either directly or, ingested, through a fluid that we're drinking, usually water.

Or we might wrap it around an affected part, body part, which might be a joint. I suppose a muscle, and so this requires a device that creates the hydrogen.

Would that probably be from water? Right through electrolysis? You know, passing electricity through, you know, two plates. You know, where water usually water is the medium, where the electricity passes through and the the, the result of pushing electricity through the water breaks up the water molecule into hydrogen and oxygen gas.

And so that's where the hydrogen is coming from in this case that we're using for hydrogen therapy and treatments. Okay. So now I have to ask a really basic question because I there like so why would I go to the work of taking hydrogen into my body.

What is the benefit of having this, hydrogen molecule. Right, right. Many benefits. But before I jump to that question, I come from a different perspective.

I'm not a doctor. I'm a electrical engineer, you know, and health enthusiast. You know, for over 30 years now. And so my, my initial goal was to increase healthspan and the quality of life.

And so the problem as we age, you know, being a biohacker, too, you know, from that perspective, as we age, we experience a lack of energy fatigue, you know, cognitive decline.

We're more susceptible to sickness and various age related health conditions. So, so my goal initially was, you know, looking for overall, you know, health more energy better, you know, strength recovery with exercise, better sleep, a sharper mind and just faster healing and reduced aches and pains because I started to feel the effects of aging, you know, the aches and.

Okay, hang on, Ben, how old are you? I just turned 55. Okay, so for the listeners, what Ben's describing is part of the aging process. Well, once we past 40, then, our our brain begins to decline.

Our immune cells begin to decline, bones, muscles begin to decline, hormone production begins to decline. And so for all of you, this this is waiting for all of us.

I I'm 69, so. Yes, these things are happening, but of course, there are things that we can do to slow that. And I'm going to put it back to you, Ben. So.

Right. Yeah. So a little bit of back to background story, which got me into this because this is kind of interesting. I didn't just decide, oh, hydrogen, that's great.

Or I want to create a business around this. I mean, I got about this through some research that was, really making sense because I was looking for the the root causes.

I mean, what is the root causes of aging and where does that lead us? So early on? I mean, years ago, I was involved in some private longevity groups where we shared and discussed the latest research on supplements and biohacking and so on a long time ago, a very interesting supplement came across, you know, our chats and forums and, maybe you may know of it today it's becoming more commercialized and popular, but called carbon 60 or C60.

And so this was way before it became mainstream and popular. So we started making our own C60, you know, dissolved in olive oil because it wasn't so available at the time.

You know, the in the question became, well, C60 is a very, you know, stable, inert molecule. But we were experience benefits that were, you know, could be considered, you know, anti-aging and just better all health and healing better, you know, focus and others.

So as I dug into the science of why it was working the C60 molecule, right. It led me to realize that, carbon 60 derives its power by acting as a transport agent for hydrogen, and it was actually the hydrogen that was the

working mechanism producing the results we were experiencing.

So then. So then that led me to think, okay, well, so if hydrogen is to work in mechanism, let's cut to the chase and focus on hydrogen and forget this expensive, you know, C60 molecule and solution.

Right. And so from there, at the time I found some, hydrogen generators, some really small ones that bubbled hydrogen through, you know, water at the time, sit on your desk.

And so the focus became hydro. But I didn't feel any effects from that. And so I got put to the side. But the hydrogen, the research kept pulling me back to hydrogen has some fundamental, benefits for the body.

How Hydrogen Supports Energy and Aging

And so I, I found research, additional research online promoting or just talking about how hydrogen gas is beneficial. So I ended up being an electrical engineer.

I end up building my own hydrogen generator to test on myself. So that's kind of how it started. And then, and then from there I started really getting the results of more, even more results than, carbon 60 was providing for me the anti-aging type, benefits, more so than the bottles, the bottles and the tablets at the time, they, they produced a very minuscule amount of hydrogen compared to what the inhalation method can produce.

You know, as much as one liter of gas. You know, these machines produce. Now, and so it's an order of magnitude of, of 100 to 1000 more hydrogen. And so that the, the key in all this I found was, the effective threshold, there's a threshold that the, these benefits really become enhanced.

And from there I start sharing my benefits. So the results I was getting with friends and family, that kind of pushed us into the business and to share with more people, and so the then becomes like, well, what is hydrogen doing in the body?

I mean, what is the connection between hydrogen and the body? How? Because you don't think of hydrogen as like, you know, a vitamin C or a supplement or magnesium you take or proteins or carbohydrates or fats or what is this hydrogen in there?

Well, it turns out that, hydrogen is very natural to the body. In a healthy gut microbiome, your body produces as much as 6 to 12l of hydrogen per day.

With the microbes taking on repeat that. So in that healthy bacteria are making hydrogen. Exactly. That's between 1206 up to 12l of day of hydrogen. And because it doesn't cause, you know, gas hydrogen is very small molecules.

So it diffuses through the body and your tissues and just passes through your tissues so it doesn't build up like, you know, other types of gas would in your intestinal tract. Right.

What's interesting, there's a Japanese study done on centurions or people or, seniors that were living over the age of 100, 100 years old. And in one of these studies, they measured their the output of their breath.

And they found that the people living over 100 years old had a higher concentration of hydrogen in their breath, you know, which led them to see that.

Okay. Where where's it coming from? In a, in a, in a gut microbiome there. And so that made that start to make the connection between longevity and hydrogen, you know, studying, you know, some of these centenarians, that's how you see the world correctly.

And in Japan, at the same rate. Yeah. Wow. That's pretty cool. And so, you know, nowadays there's, you know, thousands of, research papers, articles and studies you can find on, PubMed central and other, you know, websites

like that and people and more and more research is being done on the subject of hydrogen.

But, another interesting part. I mean, what's, what are some of the benefits and what is the science and what have we noticed? You know, as I started using myself, Sorry about that.

Yeah. So, so we have this growing body of research, and you've been using the, the hydrogen, when you're using primarily inhalation or, right, right. It was the inhalation that, really, I mean, opened my mind to the results and a lot of the results in with the sciences as well as, you know, comparing the results to what the science says, just improved energy, because, you know, hydrogen, works at a mitochondrial level, it seems, it makes the mitochondria more efficient at producing ATP, you know, the energy currency of the, of the cells.

And so that that whole ATP production process in the mitochondria is all about separating the, proton and electron from a basically a hydrogen molecule.

There's a, electrical gradient in the mitochondria where the protons are inside, you know, so it's a positive charge and inside an electron on the outside.

And as the protons pass through the membrane or mitochondria, you know, the ATP molecule is created and, you know, you know, as a byproduct, you know, there's these both reactionary re oxygen, oxygen reactive oxygen species, you know, water, you know, a carbon dioxide, ATP molecule and the proton recombine with the electrons in different forms of hydrogen as well.

So hydrogen is, hydrogen, which is just a proton. Electron is intimately involved in the mitochondria in the ATP process. Yeah. One thing we found interesting is that, the hydro machines also, you can consider the hydrogen coming out of there is light hydrogen or a deuterium depleted water or deuterium depleted hydrogen.

It's not the heavy hydrogen which tends to clog up the the little micro nano motors in your mitochondria. You know, deuterium is associated with aging.

And so there's a whole, industry around selling, light water, they call it, or light hydrogen water, which is associated with anti-aging. And so the hydrogen coming out of the machine is less likely to be the bad type of hydrogen, which would, degrade your mitochondria over time.

So that's an interesting, you know, concept for them. And generally, you know, hydrogen is considered to be a selective antioxidant. It reduces many forms of oxidative stress, stress, and inflammation.

We've seen so many cases where, it reduces inflammation and inflammatory conditions. I mean, in myself, you know, you know, sprained ankle, swollen up, healing overnight, I mean, arthritis conditions.

I had a client with two years of arthritis pain. She started in the hydrogen inhalation after two months, you know, she of the hydrate installation, she was pain free.

And so what was her condition? Arthritis. Greatest pain. Almost constant pain throughout her joints, in her body. So. So that's subsided after two months of, you know, constant inhalation of the hydrogen.

And what I've, I don't see this touted too much as, correlated with hydrogen, but but in our own research and experiments and feedback from clients, it improves circulation tremendously.

Circulation, Inflammation, and Autoimmune Benefits

An example of that is, we also, you know, in our, you know, lab here, we've got a, a nail fold microscope where you can actually look at the capillaries in the nail fold of your, your fingernails, like right above your nail where your nail is growing.

You can drop a, put a drop of oil there, put under a microscope, and you can actually see the blood in the

capillaries. It's a very thin layer of skin there.

So it's really easy to see, depending on the, on the, you know, person's condition, you could there's a whole science around, with what was required, diagnosing different health conditions by looking at the capillaries in your fingernails right there.

And so what I've seen with my own eyes is that, some people have very, you know, convoluted, distorted, you know, capillaries in their fingernails and also where you can see, like the, the cells or just the blood cells are just clotted up a very dark color and not so many are moving, but within ten to 20s.

So starting the inhalation of the hydrogen, those cells you can see the blood cells start to move. And there's a little micro clots in there. The cells were stagnant. They start to move.

They start to start to move around. And you can see the the the velocity of these to be improving, you know, it's like amazing to watch it. And I've seen again and again and again as I tested myself in friends and clients, you know, just to prove with, you know, just like, see in is believing.

It's like, hey, something's really going on here. You know, it's improving circulation. And then it's also translated into, clients that were, you know, on blood thinners.

At one point, they had to wean themselves off of blood thinners in their blood, takes on, it goes back to a natural state because it seems like the hydrogen and where the gas is generated, it imparts an electrical charge on the gas.

And since blood cells naturally have a negative charge around the most cells have a negative cell, negative, charge surrounding them, you know, like pulses, like like charges repulse, just like a north and north and north pole or south and South Pole.

They repulse. But in toxic blood, you know, cells lose their an actual ability to hold a negative charge. They become positive. And so that's when you see some of the micro clots in the stacking of cells.

Positive negative positive like like pancakes. And so we've also seen that under live blood analysis before and after where cells are stacked up. But after the inhalation of hydrogen there are more separate and free.

And so, you know, both under the live blood analysis microscope and the, you know, capillary micro, we see I mean real change is happening, you know, before our eyes.

So that's pretty impressive. You know, so to say something is going on, do we have, clinical experience or research with hydrogen and autoimmune issues.

Yes. That's you know, I can jump to that. And so a few other points I wanted to make sure. Yeah, go right ahead is so, so at the suggestion, hydrogen would be very neuroprotective, protective.

So what you're saying is like, there's a lot of studies you can find about, how it's helps with, you know, dementia, Parkinson's and Alzheimer's. And I did a talk on everything as well.

Because of the neuroprotective properties. And then with just with normal people, what we've noticed is brain fog tends to go away. Your memory becomes, you know, sharper, your mind clearer.

I've noticed you can just be more productive, even better sleep and more vivid dreams. I, I used to dream some, but in people noticed I was. I was one friend, a female.

I know she's like her. Her dreams were so vivid. After doing a hydrogen session before falling asleep and almost like, you know, scared a little. It's like, wow.

It's like I'm dreaming too much. It's too vivid, you know? But it activates in your your mind in a way not to keep you awake, but to be more natural. We're we're supposed to be dreaming and having vivid dreams like that instantly.

Without. That happens to me, you know, all night long, colorful, vivid dreams. And it even improves meditation. You can get into that zone much more quickly as well.

And so those are, you know, things, associated with the mind and that can be extrapolated to, you know, cognitive disorders as well. But in general, it seems like the, you know, also jump starts the body's natural ability to, to heal and recover, in a very holistic approach.

You know, approach. And then, you know, since you were talking about, you know, autoimmune conditions as well, right. Yeah. So the arthritis was one of them that I went to mentioned and then also my own, my own self.

I recently well, years ago, I was kind of diagnosed with, alpha gal. Are you familiar with that? Yes. Yes. It's, a meat allergy. It's, alpha is a protein found only in mammal meat, more so in the organs, but it's usually it seems to be connected with, tick bites.

So apparently, you know, a tick bite you, it may be, you know, transmits a, that alpha gal protein into your system. It creates a, immune response. In a way, is that if you eat, mammal meat, you know, you know, cows, ticks, you know, rabbits, anything with mammal meat.

I just start to digest it in that alpha gal protein becomes free. It passes through your intestines into your bloodstream. Well, that tick somehow created some kind of immune response in.

You have a, autoimmune reaction. And, I mean, the first time happened to me that hives all over the place, my my tongue swole up, itchy eyes and throat.

It was like it was crazy. And this is now 5 or 6 years ago. But, as I was doing, as you know, before, soon after I got into the hydrogen. And the hydrogen is known to suppress the immune system.

It regulates the immune system, an overactive immune system, immune system. And so I found that my reaction and I wanted to eat meat, or at least a little bit in some cases.

And so I test a little bit at up time. And I noticed over time my response to, you know, this, you know, AlphaGo reaction, meat allergy became less and less over time.

And so, I think it's a combination of all that. Hang on, Ben. So now I want to be sure and tell us how long it took from the time that you notice the sensitivity to Algol, to things becoming much more manageable.

It was a gradual thing because, I mean, I didn't want to eat a whole lot of meat to experience that, you know? Yeah. Because it's it's pretty scary the first time, the first couple times before I even know what was going on, I thought I was going to die.

You know, it's like you got hives. Your face, everything is swelling up. It's like, electric shock, you know? What do you call it? Yeah. So it's scary.

And so, and so I was like, almost like, in a way, like microdosing, you know, just different meat proteins in a form of, like, say, lard and tallow, where there's just a small amounts in there and slowly added it back into my body and give it a chance to adapt to that.

Well, at the same time, the hydrogen seemed to be, reducing my overactive immune system response to that. Right. And so, just recently, in the last few months, I've got enough, I guess, courage up to up my dose or just to see what was going on.

And, yeah. And it's like, amazing. I have I haven't found any reactions, nothing that I notice, I even forget that I eat, eat meat, you know, to check my symptoms because sometimes I'll eat it.

It takes a while for the symptoms to come on sometimes, you know, 6 to 8 hours. Because that's why it's hard to diagnosis. Because you maybe eat another meal sense.

And so you'll know that, you know, meat you've eaten after, you know, eight hours ago could have triggered this. So anyway. So, no, I have no reactions.

You know, I'm going to kind of up and try different types of meat just to see what's going on. But, yeah, it took a process of years because you scared to get back into it.

But I did notice my symptoms lessening. You know, after doing that, you know, eating meat and then doing hydrogen, you know, hydrogen, general, you know, regulates the immune system, you know, overreacting to conditions like that.

Okay. So I think our listeners are probably getting curious about the benefits of hydrogen, in terms of the mitochondrial support, because, mitochondrial dysfunction is a big part of our mass, a big part of, brain fog.

Probably also a big part of our, anxiety, depression, mood issues. How great. How long would you know the listener? How long are these sessions? Oh, I'm doing hydrogen treatment. Is this.

I'm wearing the cannula all day. I'm doing a five minute treatment. Could you describe that for the listeners? Right, right. Well, I'd recommend, based on what I've seen.

I'd recommend at least an hour a day is, you know, ideal if you're really trying to treat some conditions. I have a clients that have seen benefits going from 1 hour to 3 hours a day, especially with, your mental conditions, like, what was it?

Brain Health, MS, and Mitochondrial Support

You know, Parkinson's. You know, people have become much more functional throughout the day, you know, doing it say morning, noon and evening as opposed to just doing it for an hour in the morning.

We me, myself, I've got into the habit of habit of breathing it overnight. So part of my bedtime routine is like, flip it on the machine, put on the cannula and lay down to go to sleep.

Sometimes I, you know, if I can tangle up the cannula, I just take it off and turn off the machine. But a lot of cases, I just go all night, say eight hours breathing hydrogen and, one of the machines we, we saw on our website, you can reduce the volume of gas that's output by the machine.

To maintain, like a nice steady stream of the gas with that's not drying out to your sinuses or, Just. Yeah, that that would be the biggest, you know, I guess, drawback.

Know, maybe the drying out of the sinuses or the gas warming up over time. But if you reduce the volume of the gas that comes out on the screen, you can sleep overnight with it and just have a steady concentration of hydrogen in your body.

So, I would have this machine, and the hydrogen is generated by splitting a water molecule. So I have, do I get a combination of hydrogen and oxygen, coming there.

Right. One of our machines consider Brown's gas machine. The gas is producing a an alkaline liquid, you know, solution. And so in that case, both gases of hydrogen and oxygen are reduced at, release at the same time.

And so they're combined. So you're actually getting 60, about 66% hydrogen and 33% oxygen gas. In another

machine that uses a, a proton exchange membrane and a replace of the alkaline solution, the gases come out different parts, you know, hydrogen from one side and oxygen from the other side.

We've got a Y connector where you would connect both those gases together. And we recommend breathing in both those gases at the same time. So yes, there is an additional, you know, oxygen in there as well.

But the main benefits that I've seen come from the hydrogen gas. So, how large is this machine and how how noisy is it? It's less noise than a you see, a computer fan would be because, you know, the both machines have, like, a computer type fan, a small fan that just to keep it cool, the electrolyzer.

So, the size varies. But it's about maybe my face weighs about 10 pounds and you can easily move it from, you know, place to place. Yeah. And so, one of the thing about, making a connection between, mass and hydrogen.

Can I make a few points there? Yeah, absolutely. Yeah. And so, so the way I understand them. Ms.. You know, it's it's a condition where the immune system attacks the, protective coating of the nerves in both the brain and the spinal cord.

And so, this leads to inflammation, you know, and nerve damage that can disrupt the communication between the brain and, the body. Right. And so as a result, this causes symptoms like, muscle weakness, coordination problems, fatigue, cognition, cognitive issues.

And so, and so Ms.. In Ms.. Inflammation drives the immune system's attack on nerves, but hydrogen has been shown to reduce inflammation by lowering pro-inflammatory signals and calming immune cell activity.

Right. Also in Ms., an overactive immune system is attacking the body's own tissues. But hydrogen has been shown to regulate the body's immune system, like in the case I mentioned with my, autoimmune disease, with, the alpha guy, which is, you know, I don't have any symptoms. All right.

And so it so hydrogen also regulated by overactive immune cells in some cases like this to keep it from overreacting. Another point here is, Ms. also attacks nerve cells in the brain and spine, but hydrogen is hydrogen easily crosses the blood brain barrier.

And because hydrogen has been shown to protect nerve cells, it can help preserve the normal functioning of these brain cells. You know, because it quickly penetrates the split brain barrier.

So the so the bottom line and some of these points is like, you know, hydrogen can modulate the immune system response, reduce attacks on the nerve cells.

In theory, it should be able to help slow the progression of Ms., leading to less severe symptoms over time and reducing fatigue and improving the quality of life, you know, and for the listeners, improving mitochondrial function is so important for, slowing the disability, in restoring function.

You know, I've been talking about that for 15 years. I think this, sounds like a very, powerful tool, you know, and then the the other, thing I want you to, comment on.

I know hydrogen, oxygen people can get worried about fire hazards. What are their issues that you've done to ensure the safety of the equipment? Right. Yeah.

Hydrogen is flammable, so that's something to consider. But, the amount of hydrogen coming out of a cannula is so small. You know, if you in, it's very concentrated right at the end of the canyon.

So if you held up a match and lit the end of the cannula, it would, you know, trace the candle back into a small little water bubble bottle on the side of machine, and that would actually pop with a loud pitch pop, right?

So we don't recommend hold up a ladder to it. But but like just within an inch from the cannula, it becomes

inflammable. Hydrogen is only flammable in the air.

At about 4.7%, you know, concentration in air. So it quickly dissipates to an unfathomable concentration. And so the machines are calibrated in a way that, as you inhale a breath that includes hydrogen, you're inhaling so much normal air around you that it's a unfathomable concentration that you're inhaling into your lungs.

Okay. So we can reassure our listeners that we we have addressed that, and this is, a device that you can get to inhale the oxygen, hydrogen. You you use this device, you could enrich water if you want to enrich water.

Right. You can with the same device you can inhalation, which I say you get, you know, 80 to 90% of the benefits come from the inhalation. If you drink water, you treat the water, you get about 10 to 20% additional benefits from drinking water.

That has more effects on your digestive system. It seems to make your digestion system work smoother. Also, men that with prostate problems it it I've got clients that shows that it shrinks the prostate.

You know, going back for scans. So that was it, guys. Their youth in, in, so, I'm sure they're appreciating that. Right. And then, the diffusion through the bags, I mean, I tell the story to that, I had a torn rotator cuff at one time, you know, two years of constant pain in my shoulder.

I had ozone injections, platelet rich plasma injections as well, to try to heal it. None of those worked. Even, post electromagnetic therapies. Be enough?

But I noticed when I put, a, silicone funnel with hydrogen applied to my shoulder, it felt better, but it was very short lived. So what I'm doing is I made a sleeve to attach, you know, here, in here, put the cannula inside that sleeve or bag.

And I did three overnight treatments every three days just because that's when it was convenient. And then from there, it just started healing. I mean, that's the only way I can explain it.

And I mean, since then it just healed up itself. Another example of that. I had, planter fasciitis in my right foot. 20 years of pain. That's I wake up in the morning, I step on that first.

I, it feels like a bruise on the bottom of your foot, like you stepped on a rock. And this bruise right there, about one week of overnight treatments, you know, bagging my foot.

It started healing. But it there was a little after week after week, there was still a little bit of pain there, but it what it seemed to really do and and this happens in many cases, it jump starts.

The healing process in the healing continues from that on. And so I can't even touch it on the back of my foot. I can't even find the tender spot that was once, you know, bothering me for, you know, years.

Okay, so the, the biggest take, take home message.

Safety, Usage Protocols, and Product Info

I'm going to I'm going to invite to tell our listeners with EMS, many of whom are, been hearing my message that at age 40 is when we stop having the acute relapses and transition to this progressive phase of the illness, where mitochondrial function determines if you get into more trouble or if you're doing well.

So, can you summarize the key benefit for our listeners? For adding hydrogen, to their self-care program? Mean a lot of the, the symptoms that, you know, autoimmune diseases and the Ms.

creates, I mean, the are, like I said, directly related to the mitochondria. And so hydrogen directly addresses those. It makes the mitochondria more efficient.

I mean, we experience that with more energy, less fatigue, less need for naps. You wake up more energized. You know, if you lay down to the middle of the day to take a nap or a break, I which I've done before, it's like, oh, I need to regenerate and plug into the hybrid machine.

It's like, I can't sleep after that. I'm ready to go. It kind of revitalizes you. So the elimination of fatigue, you know, which is directly related to mitochondria and energy production.

And also when your mitochondria are not efficient, it produces a lot of, those the reactive oxygen species and oxidative stress. And that's a byproduct of just normal cellular metabolism.

But with the hydrogen standing by, it could quickly neutralize a lot of those free radicals. And those free radicals are really, responsible for inflammation and so bad or inefficient metabolize and cascades into inflammation, which can go to, inflammation or to these diseases and conditions.

So the hydrogen addresses a lot of these symptoms in, you know, age related diseases at the root cause. At the side of the mitochondrial. Exactly. Okay.

Ben, this has been really, fascinating. I'm sure our listeners are wanting to learn more. So how do they find you and how do they find your hydrogen generators?

Right, right. Our website is H2 biohacker.com. Lots more information details there. There. You can also sign up for a free 30 minute free consultation where in most cases you'll be talking to me directly and I can go into more detail with specific conditions that we've had experience, with the hydrogen, you know, helping, so I can talk to very specific, conditions would be diabetes or cancer or dementia.

I mean, we I've worked with hundreds if not thousands of clients at this point and have gotten a lot of feedback. So I know, what works, what you can experience, what what in what protocols use in different cases and about how long you have to use some of these machines, or whether the water treatment will work better than the inhalation and how often do to you know, you know, so, what, one more time.

It's your website is H2. It's H in the number two biohacker.com h2 biohacker.com. So there like again you can sign up for a 30 minute free consultation also to if you want to go ahead and buy one of my machines, there's a special discount for the doctor.

Talk to some people here. You know if you enter doctor talks in the discount coupon area, you'll get, an additional $300 off a purchase of any of our machines there.

Okay. Well, then, thank you so very much.