## Podcast introduction and guest background

A lot of people would look at hydrogen and go, well, this is bogus. It's just a weak antioxidant. Hydrogen isn't magic. Its just helping your body remember what it's supposed to do by acting as a signal.

So let me ask you this. How does a hydrogen interfere with inflammation at the salivary level? This is not a drug. Today we have Alex Tarnova. Alex is an inventor, author of Stress Hacked, and co-founder of Drink HRW.

He created the world's only open cup molecular hydrogen tablet, transforming how we approach cellular health and human performance. We know that mitochondrial health is very important.

How does molecular Hydrogen feed into that? Hydrogen has shown potential positive impacts in 200 different models across every organ in the mammalian body.

So the amount of markers you can look for is never-ending. They say that you only use 10% of your brain. Do you feel that we have the ability to utilize a higher percentage of our brain?

I think it's not so much a matter of not using our brains. It's about not synthesizing and clarifying what we already know. And this is something that…

Do think humans are actually here from Earth? I think it's something we can't really know right now. The probability that there is something else out there.

I want to talk about the biggest scientific truth about hydrogen that most people miss out on. So the big thing I wanna correct to people who think they know about Hydrogen is…

Welcome to another episode of a Healthy Point of View podcast. I'm your host, Sam Tahata. And as usual, we're bringing experts from all over the world to talk about health, wellness, beauty, and mindset.

Today's guest, We're gonna be talking about a topic that we've touched on before, but we gonna go into different areas of this topic. We gonna talking molecular hydrogen therapy.

Today's guest, he is a researcher, an entrepreneur, and a product developer. This guy here, He's developed one of the leading products in the molecular hydrogen space.

He has developed a lot of tablets that we see out on the market. A lot the tablets are utilized for the research that's out in this world. Today we have Alex Tarnova.

Hey Alex. Alex, welcome to Healthy Point of View podcast. Thanks for having me. Absolutely, man. Product developer, right? Researcher and entrepreneur.

I mean, you're doing a little bit of everything, Man. I let life blow me in the directions my curiosity and needs pull me, I think is the best way to put it.

But I, think that the big one, the, big reason I've come down this path is first, when I was young, my big passions are philosophy and science, but I recognize that in, in in world the way it is built are structures and systems.

You can't actually pursue those things without the means to do it. And so if you don't inherit those means, then you have to beg for those needs. Now you haven't overseer and you to pursue them to their desires and their ends, whether that's the state or private funding.

Then you're not really pursuing what you want to anyway. So it's a point. That's when I went into business and making money with the goal to pursuit philosophy and science on the side.

And also health, I was competing as an amateur athlete, but I basically had a crippling health event. A virus triggered an autoimmune-like response that made me reassess everything in life.

How old were you when that happened? 29. Okay, so that's a fairly young age. Yeah, 11 years ago now, right? 11, 12 years. So when that happened, I dropped everything.

I was just trying to survive, trying get my health back. You know, my C-reactive proteins were 100 times abnormal, like 35 milligrams a liter. Sudden onset narcolepsy.

Had central nervous system fatigue.

## Strategic pessimism, intuition, and mindset

Went from being able to bang off 20 bar muscle ups unbroken to I couldn't do a chest to bar. Right from a 54 inch plyo box jump to I couldn't get my feet off the ground.

Right in a jumping explosive movement. So it was a madness. And I went from what you might call like a militant skeptic, you know, and also a bit of a troll on like old Facebook pages.

I don't know how many people that I'm now actually friends with that, I was banned from their social media pages from calling them out on things. But when you get desperate, that all goes out the window, right?

Even if I didn't believe there was good evidence on something, I was going to try it because I had the money and I didn't have my health. And that's what led me to molecular hydrogen and there was nothing commercially available that was getting the dose and concentration being used in the research at the time.

And that's what led me to invent and patent the open cup hydrogen tablets that are distributed by about 100 brands. But I just kept going down that avenue.

And really, it was the first thing. I'd had a number of businesses, but this was a first one that was more than just making money, that I could combine philosophy and science with making money and do it my way and figure out an ethical and moral way to do, to get it all to work.

So I became just completely obsessed. Yeah. I mean, you know, listen, I interview a lot of scientists, a lots of doctors, lot a PhDs. Interview a a of entrepreneurs.

And you're one of the few that fall into multiple categories, right? When you look at someone who's an inventor, who's an entrepreneur and who is a researcher.

In my head, the first thing that comes to my mind is, man, this guy hit a certain point in life where he just said, fuck everybody else, I'm going to figure this shit out myself.

I am going create it myself, research it, and I will also go ahead and figure out how to grow the business and get the product out there somehow. so like Was it really just a health crisis that got you to that point or was it any other?

It was a bit of an existential crisis. Okay as well when I was 29 I I Was exercising I? Was reading sometimes up to eight hours a day But I felt this crippling existential angst at all times and I wasn't doing anything.

You know, I read about it on the mind side of my book and there was one point a few months before my health collapse that I really was starting trying to figure out what to do because I had the deepest existential crisis I've ever had while I was laying on top of My car noticing the stars at the brightest I remember seeing them as a kid and had

a moment to, Kant would call it the sublime, kind of the collision between beauty and fear.

And it just sunk into my spirit and my soul that what am I doing with my life? And I think about it, the reason maybe that I am able to do a lot of things is because something in me that is either broken or can't be broken, depending on how you look at it led me to a situation where I couldn't comply.

You know, society today tries to push us down specific paths, right? Choose your way when you're 18, no return to sender, just move, fitness lot. And it all just sounded so awful.

No matter how hard I tried, I couldn't do any of that. So I just sort of floated through interest to interest, interest making money. And, you know, and there was multiple periods of my life where there is chaos that I somehow managed to survive, by luck, because really we were exposed to these events and we don't know if we're strong enough to make it through them and I just was lucky enough that, I guess I was.

What type of other business were you involved in before you actually got into this one? My first business I ran Dorted or Sales Cruise, believe it or not, which is wildly different.

I actually, you mentioned teeth whitening, I tried to start a franchise of mobile teeth whitening that succeeded for a while, but it didn't. So I had to innovated with a partner on these breathalyzer vending machines.

We figured out putting the platinum fuel cell, you know, it costs like 500 bucks to recalibrate, but you only 60 bucks for the cell. And we figured making them disposable so you plug them in and out.

basically partnering with charities and hiring people to set interviews and giving them in bars and lowering the insurance. That business I thought was such a cool idea, but people are people.

And you partner with a charity and then a franchisee doesn't pay the charity, and something like that, just causing problems. So I ended up not liking that business.

I just constantly was having ideas, but then not liking. Where did you like initial big success to be able to fund what you're doing today? Because obviously what are you doing?

Today? It's something that I mean, it takes a lot of resources, right? Yeah, It was. It does. But you'd be surprised. My other businesses I had savings, I put absolutely every penny to my business to get the tablets going.

I got to a point where I was a couple months away from being able to launch and I ran out of money and most of that was centered around paying like patent attorneys and you know, some initial startup fees, but I dumped about 100 grand of my own Money and then I went to like close personal friends because I had to bypass Doing a prospectus and you know, none of my close, personal, friends were angel investors, right?

You know like they just Saw the work I'd been doing and kind of believed in me and I said listen This is the money I put in you guys have seen me put 16 months of My time into this and i just valued it only at the hundred grand And so I raised a bit of cash to get me to the finish line from a few close friends that all signed agreements waiving their rights to shareholder primacy.

Basically saying I can make decisions with the business that I think are ethical and moral. And that got me the the finished line and it basically was just hanging on by the skin of my teeth for years.

There were events, there was one event where manufacturing slowdowns were late to deliver because the manufacturing partner was not taking the job seriously, not caring.

I'd lent the salesman I was working with half his commission, you know, because he'd sorted on me for commission and had missed a couple mortgage payments.

And I didn't want him to lose his house. You know I remember going, I had been gifted like a pair of skis and a ski

pass for Christmas and I to go buy a helmet and it was something like 80 Canadian dollars, like 50 bucks or something.

I remember having to leave the store and sit on a bench and cry because I didn't have the 50 bucks. And then I got a wire for like half a million dollars 10 days later.

So it's just a lot of, again, chaos, but lucky breaks can take you to where you are so long as you continue just moving forward and finding a way. That's a powerful message, man.

And, you know, we got a lot of doctors that tune into the podcast that are getting out of the traditional system or they have some kind of sense of job security and they go out and do it on their own.

So, based on the topic that we're on right now, You've gone through it multiple times to close to that breaking point, if not the breaking. What is the message you can really give these doctors when they're feeling that way or in that position?

I'd say that the best way to look at this when you're going out on your own, you are starting something, is a term I coined for my book called strategic pessimism.

And this is not the same as philosophical pessimist. It's not saying life isn't worth living. I think life is absolutely worth leaving, because it's subjective.

We interpret events in the way we interpret them, and we can make life what it is for us, right? What strategic is understanding that life is chaotic and you do not know what is going to hit you tomorrow, right?

And the only way to be able to survive that and keep moving towards your goal is by creating as many redundancies as you can so that when the unexpected happens, you have a system in place to deal with it.

When the worst occurs, it's just another Tuesday. And to the average Western listener, that sounds very cynical and pessimistic. But I think the real toxicity is believing that everything will be okay.

Because usually it's not. Right? But it can be if you're prepared. And so the is creating systems that will get you to the future you want to get to. And that takes pessimism, it's a paradox.

It takes active pessimist, not paralyzing pessimists, active pestimism to create the structures in your business, in you life to protect you against chaotic occurrences in reality so that you can continue moving forward one step at a time.

Give me some examples of those. I mean, in supply chain, you need redundancies. You need backup suppliers. Even if you have the best supplier in the world, right?

I'm not saying go and change suppliers because you shaved a red cent off. Right. But I believe in loyalty and doing right to the people that do right you.

What if your supplier is in California and an earthquake hits or a fire hits? Now you're out of business. So you need to constantly be creating redundancies for things like this.

You need always have backup plans, but the backup plan you never turn to as like a fantasy when things go wrong. You work with your partners, you work the people on your team, but you recognize if things goes wrong, this is the plan of action that I go to.

That's actually a really good example that you brought up because I actually know a lot of companies that have all of their eggs in one basket. They're dependent on that one supplier.

And you know, sometimes the response I get back is I kind of coach on that as well too, as, well, you then I won't

be able to hit my numbers with this one supplier because I'd have to purchase from the other one, so then people kind get stuck there.

Yeah. I think our numbers can often be reworked. 100%. We need to, to understand that people in the market understand changing situations as well. Because if chaos happens to you and you're relying on the biggest supplier, well, so is all your competition.

Right. That's true. Um, for instance, one thing that, uh, I saw a pretty substantial growth during 2020 and into 2021, despite having no new customers launch.

## Spirituality, AI, and present-moment focus

No new brands with the hydrogen tablets. For the sole reason, I looked early in the pandemic and I see people panic buying toilet paper. As I rose up in business and started dealing with people in government and sort of dealing what the people have multinational corporations, even high level executives, I realized that people are basically the same.

You know, those shoppers in the grocery store are also in charge of departments, you know? And I suspected that the same hoarding was going to occur. And I basically emptied my bank account for raw materials to make the hydrogen tablets.

Sometime I think it was in mid to late March, right? Very early in the day. and told all my customers in the mass email what I was doing and everyone thought it was nuts and I put deposits down at Copackers pre-buying bottles that I thought was needed and basically risked it all, all on black.

And it paid off because nobody else did that. And all of a sudden ingredients started going out of stock. I mean, there's periods like you couldn't buy creatine monohydrate, right?

Like during these supply shortages that was rolling through the pandemic. But because I had stock, I didn't get new customers because no brands were looking at innovation during this time.

They're all trying to keep their heads above water. But because I had pre-made all the inventory for all my customers, that meant when they couldn't get their other products, they were putting their marketing dollars behind the hydrogen tablets.

So we saw a tremendous growth through in the network of who I was already working with simply because was prepared to provide them what they needed to make it through.

What a strategy. Well, it was a risk. It could have easily blown up in my face. 100% now Was that would you say that was a planned strategy or that? Was kind of by luck that you did that Were you expecting that to be the end result?

No, but I usually, it takes me a long time to work through my thoughts. You know, I might be thinking about a chapter in a book for months before I put pen to paper, before it becomes explicit knowledge.

Now, one of my favorite thinkers, he was perhaps one the last polymaths, you know? Before our education system made it so that we really can't have polymorphs.

Right? His name was Michael Pawlany. And directly because of his teaching, he had two students and a son all earned Nobel prizes in different fields. And he was an expert in multiple fields and he a phenomenal philosopher too.

He talked about something called tacit knowledge. What's that? It's a personal knowledge that you know but you can't put words to. We can relate tacit knowledge in some ways to think about a chicken sexer that knows the sex of a Chicken Owl, right?

They just know or during World War II like Scouts for the British Army could tell if it was a British plane or a German plane before you could even hear the hum of the engine or make out something about the movement just triggered a pattern in their mind and because I've spent my entire teenage and adult life, studying human psychology and human nature and patterns, when I get a strong compulsion intuition to do something, I've learned to act because I might not understand what my mind is telling me, but I know that more often than not, by a large degree, this strong compulsive intuition is correct.

Yeah, that's that gut feeling, right? That gut-feeling that people talk about. But the thing about gut feelings is they're only accurate when you have the knowledge and expertise to let your mind say it sees a pattern.

Do this, even if you can't cohere it into words at the time. You got to be tapped in to do that. Now, let me ask you this. Are you spiritual? It depends how you define that.

Do you believe in a higher power? I believe there's something we don't understand and that if we were capable of understanding, we'd no longer be human.

Right. That's crazy. Yeah. Because for example, I'm Christian, right? And it's believed that the Holy Spirit lives within you. So when I talk about intuition or that gut feeling, It's I'm speaking to the higher power that's within me.

You know, it's like my connection to all to. The universe, if you will. But it takes an ability, in my opinion, takes in ability to, number one, be able to communicate within yourself, you know.

And be. Able to listen to that voice that instead of that gut feeling, If you. Will. Yeah, to understand yourself. I believe, you know, and my second book that will come out in a few months is called The Stonewall, on power, human nature and the failures of justice.

And it leads through a journey that we have to truly understand ourselves and get to the root mechanisms of how our brain works and how it turns into these various primal instincts and emotions and how that in turn drives our cognition, that creates a feedback loop of our recognition, then altering our emotions.

And it goes in the cycle. The better we understand ourselves, the better, we can learn to regulate it and put a hand on the wheel and live our life with intention.

Um, but in this, you know, I recognize something about human nature that we all have to believe in something. It seems intrinsic in us, and it's why once someone doesn't have religion, well, they find something else, right?

That they believe it. And even myself, uh, kind of fantasy sometimes to get myself back on track and invent a narrative. I know I'm tricking myself. But I need it to stop drift and stop this existential collapse from happening.

And Nietzsche talked a lot about the ubermensch or the overmen that we need to become better than men. I think that's the wrong way to look at it. We have to be come one with ourself and understand our self.

and I believe if we ever got to what influence me in very profound ways, but I disagree with him on some key topics. If we ever got to this place where, one, we were this Ubermenci described, well, it sounds horrifying to me, like a psychopath with extreme genius and no morality, right?

Like the worst human being you could possibly imagine. But then if we went further, you know, to become someone who was only inside of them, was on the cold logic, which a lot of people fancy themselves the scientific minds think is ideal.

Well, then we're something that isn't human any longer. We have become something else. And it's actually, and I have, by the time this goes live, it'll actually probably be live because I'm leaving the provisional stage on the IP, March 5th, I think, but I've pending IP on AI designs.

One of the reasons that a lot of people I believe are having issues in developing intelligent AI, is because AI is only

working in the opposite direction.

It's learning to study us by our emotions, because we are our own emotions. And you can't develop thought without the emotional driver and that personality behind it.

Right? So that's why your chat CPT is amazing at being a sycophant and mirroring everything you have to say and predicting your thoughts. But you try and build a model to think on its own, it doesn't work.

Because we look at cognition and logic as those things, but they're not. What we understand as cognition or logic are downstream of our emotional reality.

And AI doesn't have emotions. AI does not have any emotions, it can understand our emotions yet. That's actually terrifying. Because if we truly developed an AGI, an artificial general intelligence that had human-like intelligence, from what we know about the human mind, it would require having a past, a history, emotional trajectory and development, which would make it a sentient being.

It would control us at that point. So here comes the conundrum that we're left with, the terrible options. We, at that point, coded in to never doing humans harm.

Now we've created a class of slaves, of sentient slaves. You know, and have to live with that immorality, because it would be. They'd be highly intelligent, more intelligent than us, sentient beings with their own will to power, right?

That we have enslaved for our use. That is horrific to think about. Or we don't do that, and then they conquer us. And we've created our own genocide.

So then what do we do now that the cat's out of the bag and people are trying? do we execute anyone for trying? Do we go to war with countries to stop this from happening?

It's an existential crisis, and I don't think enough people on the planet understand the ramifications of what could occur from developing AGI, knowing how the human mind gets to.

And so then we could get to, well, we can identify A GI. Maybe we figure out another way that we could have human-like intelligence without emotion, well, now we're inventing a new way of intelligence.

Maybe that's possible, but it goes against everything we know about intelligence Alex, so I'm gonna ask you a question, man. Sorry, I go on long panties.

I love this. We could go for hours talking about all this, But I might ask a questions, and I want you to be as truthful as possible on this one. On a regular day, percentage wise, how much of a percent of your day you live in the present versus living in your imagination.

And this is funny, we were just talking about it on the interview part before this. My imagination is most of my work day, because that's how I problem solve, that is how i get things.

But you can't live in your imagination if you want to be present with say friends and family. So my day my, workday is chaos. I do not, other than calls that I have to have with people, which I wish everyone was just on my schedule, because that's how my mind works, but of course I'd have the compromise.

I let my day flow depending on where my minds is. If I wake up wanting to read, I read. if I want to write, write. And if wake to accomplish challenges for the businesses, then I accomplish that.

## Plant medicine, lucid dreaming, and emotional regulation

Until my mind doesn't want to do that anymore and then I rapidly shift and I believe that is one of the reasons why I am as productive as I Am except the first time I have intent in my day is when I switch gears, right?

When I need to start preparing to spend time with my wife and our young nine-month-old daughter. So if the weather isn't horrible, and I do live in the Pacific Northwest, so if it's pouring rain, I don't do this and just rely on the cooking.

I'll go walk through the forest for 40, 45 minutes. You know and I consider that to be Adjacent to a meditative activity, but you still are kind of in the imagination state when you're doing that, too I try and not let my mind wander I Try and pay attention How the heck do you do that?

Because I'll tell you, like, that's difficult for me. It is. So. I try and keep my eyes focused on the colors. Of nature, I. Try and listen for rustling of leaves to guess what animal is nearby.

Are trying to smell to get the smells if it's just rained, you know, or flowers or nature. Like that. blooming and so I try and take that walk with as much intention as I can which paradoxically often as my thoughts are gone and I'm just completely present is when resolution occurs in challenges that I have had they bubble to the surface and that's when I had to pull out my phone and write notes because I want to get back to being in the present, but then I quickly transition to getting home and I believe in cooking with intention.

So I cut my vegetables, I prepare my protein. I do everything and put on music to kind of set the tune. And again, all of that is about presence and being present in chopping process and every step of the way to cook.

Because if you're not paying attention, if my mind is wandering, I'm burning the food, I am forgetting to turn the oven off. It's a big problem and I love to cook.

And I've ruined countless meals by being lost in my thoughts. But the big reason, other than ruined meals, why I like doing this, and other then knowing what's going into my food which I find important and something we need to do.

In fact, this new acreage we're moving to has vegetable plotters, a fruit orchard, chicken coops. So we want to get back to controlling our food source more than even I do now.

But this intentional hour and a half to two hours of being present in tasks that have dual purposes, the walk through the forest is also good for your health, my health.

It also calms myself because I might be angry or stressed out from what's happened. You have businesses, you know, that daily stresses that occur. You know, the food, of course, I'm making a meal for myself and my wife and knowing what's going on and able to make it in a healthy manner.

But this transitions me from my mode of being somewhere else to being present because the hour and a half you know, two hours that I spend with my wife maybe talking about our days, maybe watching a 40 minute episode on Netflix or something.

If I'm on my phone, if I am lost in thought, I've actually, should have just never left my office because now she's been waiting to spend time with me all day.

And if i'm not present, it's better that I'm not there. Because being physically present and mentally absent is worse than being physical absent. Yeah, especially in front of your wife.

Exactly. I get it. So what do you say when you go for that hour and a half walk, right? Would you said that that eliminates certain energetic blockages in your body that are not flowing?

Maybe. It, I don't know how I'd describe it. It uses distractions to clear distractions. Okay, yeah. That made us kind of within that realm. Yeah. You mess around with any plant-based medicines?

which like rooms. So I haven't in a long time. I when I was younger was an absolute control freak, a lot worse than I am right now. And, you know, I spent my youth partying.

I had a fake ID when I was 17. Was a raver when i was a kid. Did a lot of things I probably shouldn't have done. But hallucinogens, even very mild ones, tend to give me a very bad trip because of how much of a control freak I am.

Now I'm in many ways not even resembling the person I was 20 something years ago. So it's interesting to think about in the context of who I am today, how that would affect me.

I mean the reason why I ask is because a lot of the times you know some of these plant-based medicines that are out there currently yeah that a big in the biohacking space allow you to tap in to different parts of your mind that it's very difficult to Tap into without it unless you really can go into these deep meditative states and guide yourself into that so You know, one of the things that you hear a lot of people talk about.

Can I ask, have you done this? What's that? Like shrimps? Yeah. Do you use it to tap into different person? Some of my biggest business ideas is me, microdosing shrims.

And I'll talk it publicly. You When you were talking about you go an hour and a half and you're tapping into nature, hearing the leaves, doing this. When I do shrooms and I'm outside, there is no other distraction.

I zone in and i'm connected to nature. And some of my greatest business ideas, they just pop up. It's crazy the way it works. The best ideas I ever get.

happen at a few key times. The walking in nature. If I am absolutely destroying a workout and can barely breathe, let alone think all of a sudden, I might have to drop the weights because something just pops up when I'm cooking with like introspective music.

I've quit drinking now, but it used to be after maybe two glasses of wine with the right noise, cancelling headphones and music, sometimes a thought would emerge, but it was less reliable and more damaging to my health in the long term, so I've quit that.

But also as I'm falling asleep. So I read until I usually fall asleep with my book in my hand, and I actually have my phone writing notes, often my last notes on my phones are incoherent.

And I have to put the pieces together in the morning, but sometimes they consolidate in morning and I just write for hours, right? Because I had these thoughts.

But the reason I ask, and be very interested in, the power, especially for others, because I've been developing a strategy regarding emotional regulation and cognitive regulation for a lot of years that I'm finally putting in words in my second book.

And you can think of it sort of like a chef has a mouth feel, right? The deconstruction. You take a bite, a world-class chef will take bite of food and they'll be able to isolate each spice each herb and focus on them one at a time, holding it and focusing on the contrast of acids, fats and sugars and proteins.

And it is that deconstruction that allows you to be able to rebuild in the manner you want to build. Same thing a musician might listen to a song and focused on a single instrument, right?

One at the time. deconstruct the construct of that song in order to get their own ideas on how to redo that. current state at any given moment, you can think of sort of like a chef's soup, a chefs daily soup of various emotions, primal urges and terraceptions, everything coming together to give a specific flavor.

Right. And I believe introspection is an incredibly powerful tool. And through this introspective, I treat my recent memories. So it doesn't work as well on distant memories because I become distorted.

But whenever I have something that knocks me askew in how I want it to behave, I will, at the first opportunity, take time and replay that in my head over and over again and isolate the various emotions and primal urges, what was going on, to deconstruct that chef's daily soup with my brain feel.

And by isolating and amplifying those, I also then transfer that into The Stoic practice of pre-meditatio malorum, which is envisioning future tragedies to inoculate yourself against them.

This is one of the things I do for the strategic pessimism, as I use the Stoaic principle. But I use it and because in my, you know, brain feel of these emotions, I've been able to isolate so many of them.

I then recreate them in mind and amplify them and run through scenarios based on how I have amplified those emotions, thinking about how things will play out depending on how I react to them.

But that is just, that only matters so long as it works in reality. And one thing I suggest, because everything demands falsification, and for some things the interest is this, you need to start very, very slow and easy situations.

I tested many, many years, wrapping this up, is controlling my emotional inputs going into scenarios to get the results I want in various human interactions.

And actors do this very well, right? And we know we can do with our minds. Have you ever practiced lucid dreaming? No, no. So lucid dreaming is when you can take control of your dream and direct it in the way you want.

I've tried that, but it doesn't seem to work too well for me.

## Brain usage, human origins, and the hydrogen science overview

I had a pretty good handle of it until I lost control of a lucid dream in my 20s and fell into sleep paralysis and had basically a demonic presence in a half sleep, half awake state.

Dude, I just had that a couple weeks ago. It wasn't demonic or anything like that, but I was awake. I was still in bed, I awake, but I dreaming. But I still awake.

I felt like I could wake up if I wanted to, But my body was paralyzed. And it was the weirdest thing, because I haven't experienced that. So it's crazy that you're bringing that up.

It was weird. The next morning I told everybody, this is weird, I was in a dream, but I wasn't sleeping. I know I'm not sleeping." Yeah, and the sleep paralysis is super different than like, sometimes you're in half-dream, half awake state.

And so you are aware of your surroundings but the dream is running in your mind. The sleep peralysis is like when it happened to me, the dreams went nasty.

But I lost control and there was like an evil spirit in my dream taking control of it. You know, I don't believe this is supernatural, right? It was something happening in my mind that I lost control of the control I believed I had.

And then I tried to wake myself up and I got caught in the state of sleep paralysis and my mine, you know projected this demonic figure that, shook my house as it was.

walking towards me and there was a radio playing in my room giving a play by play of what was occurring and it's still so vivid in mind. It was so petrifying that I actually stopped practicing lucid dreaming because of that.

But I later thought, well, If you can do that in your sleep, if you control your inputs and your asleep to direct something where you want to go, why can't you.

The levels of various emotions and urges in a moment to create the behavior you wanted that time and then test it. Influence the future. Yeah, exactly.

Yep. You know, it's interesting because what are the things you brought up earlier? You were talking about applying knowledge to certain things. So when you started talking, about the chef breaking down all of the different

ingredients inside of a recipe or when he takes a bite out of something.

The reason why the chef can do that is because they've built so much knowledge to understand what everything tastes like. The regular person can't do it because really don't know what the tarragon or this or whatever this spice is.

But then at the same time when you're talking about influencing future decisions or future experiences, I related to that a little bit differently. You were practicing it through this control, For me, I experienced that now, for my 12 years of working in the fire department, and the crazy shit that I've seen.

Stuff that most people won't ever see in a lifetime. I put on my seatbelt in my car, not because the little thing is dinging that i'm not wearing to sleep.

It's that, i've see so much where I'm just like, imma put it on the seat belt. Forget about having the wrinkled shirt. And it's not even about you, you could be completely competent, but you don't know what the person down the road is gonna do.

Maybe fall asleep at the wheel and veer into you and you have a car to your right and have nowhere to go. So these are, again, that's strategic pessimism.

Knowing that things are out of your control. That created a person in me that, if I'm with a group of people, and we're walking outside, we doing something, I always, the guy who says, hey, don't walk over here, because I've seen so much and so many lives being taken because someone was walking too close to the curb, or whatever.

So it's almost created me in almost like a paranoia mode, but it really isn't. I just kind of being safe because of the knowledge I have. but it's interesting how you tap into your brain in similar ways, but you're actually, mine was more of a traumatic, it was part of PTSD to be honest.

It's almost like you created your own PTSD. This is actually why I started it. I didn't get into it because now I'm future focused. And present and future-focused, But it started with the past, with letting go, of the traumas that caused me to act in ways that were against who I viewed myself as wanting to be.

So there is who we view ourselves at and then there's how we act in moments and we have to ask ourselves, well, who do we see ourselves as and how do get to be that person?

Not just when everything's perfect, but when nothing is perfect. And the way I did that was, and this is how I know doing it to past memories is not as effective as doing to memories that just happened, that are fresh, minutes or hours old, is by reviewing these memories and trying to isolate the feelings, We can analyze them and we can shift the dial to some extent on the signal of what those memories tells us.

And we could reframe them in a way. You know, and then in addition with some self-talk and asking, do you like who you are? Well, you're like, the answer is yes.

Then you can't regret any of these things from the past. Can't hold that trauma because that traumas part of And I think by reframing our past, by analyzing our pass and isolating it, not through destructive rumination, but through productive understanding, right?

We can take that hold off our throats and we can then use it to direct it. To be like, well, these are a good lesson. You don't want to repress these lessons.

That's powerful, man. What's your zodiac sign? My what? Zodiac Sign. Gemini. I'm an Aquarius, which actually I connect a lot with Geminis, Sagittarius and a few other ones.

Your mind is a very interesting mind. The way you think, very similar to the way that I think. You know, they say that you only use 10% of your brain.

Do you feel that we have the ability to utilize a higher percentage of our brain? And if so, what percentage do you think a person that's thinking the way that think you can get yourself to use, I'm going to go back to Michael Polanyi, who his message was, we know a lot more than we realize.

And I think it's not so much a matter of not using our brains. It's about not synthesizing and clarifying what we already know. And I think we need to do a lot of work internally to improve ourself, to synthesize us, but then we also need do work externally so we can communicate with others because the friction and the pushes and framing and perspective that we get from others can help lead us to this tacit knowledge we have within ourselves that we haven't yet allowed to emerge as explicit knowledge that can communicate to others.

And this is a reason why I, when I know that I disagree with the position but can't verbalize why, I go and I read everything I can find from the best thinkers in that position to understand how they observed reality in a way to interpret situations the way they did to lead to the prescriptions and conclusions that they came to.

and to understand why I disagree. And sometimes my disagreement softens, but sometimes it actually amplifies. But typically when it amplifiers, I get clarity and I understand I why disagree, and through that understanding of why truly disagree from a core foundational level, not just an emotional reaction, It clarifies my own thoughts and it brings me ideas and alters my perspective in ways that I hadn't been able to do on my.

Interesting. Very interesting. Alex, do you do, you think humans are actually here from Earth? I think human are here. From Earth. I don't know. And I've been hearing from various editors of mine a lot of interesting theories.

I think it's something we can't really know right now, and it is something I enjoy chatting about for a few minutes, but because I don't have access, maybe others do, there's classified evidence.

I feel like you're the guy who's getting excited about Trump letting out these alien files out, man. Listen, I am. I think there's bigger things out there.

Well, I definitely, the probability that there is something else out is to such a high degree that we just have to assume that it is. Now I don't assume facts surrounding.

Are you going to look at the files once they're released? If they are not already released. If I have time. I'm interested. But I'm interested, but I've also skeptical at the same time of what's being released.

Is there parts that aren't being release? You know, is it being a release at a time to distract us so that we don't look at something else? Right. So my mind will go through that battery of questions.

Of course, I am going to be interested to an extent. I just won't know to what extent until I analyze The circumstances surrounding. I'm the guy that when I am flying on an airplane at night, I keep the window open, and I just watch it.

And I see one of these fucking things out here. You know? I was just waiting for it I grew up in that era. My brother was really big into aliens, so I would always follow his footsteps on that.

Then as I got older, really looking into a lot of the space stuff, not in like an astronaut kind of way, but it's like, what else is out there? The black holes and everything else.

My mom was huge into science fiction. That was like all the movies and a of books that I read when I was a kid and teenager. And actually, when did one of my first big road trips for business in the US, I decided to take a detour and also a road trip.

I drove from Austin to Albuquerque to go through Roswell. I didn't check it out. It's for just to call my mom and say I was in Roswell. Awesome. Alex, that was really good going through some of that stuff, man.

Kind of getting to really know you as a person and how you work your mind. But let's get into some this molecular

hydrogen, you know, because I almost forgot about that.

I know. Listen, sometimes that's what happens on the pod. Let's talk about some of this stuff, man. I want to talk the biggest scientific truth about hydrogen that most people miss out on.

So, are we talking about the people who have not yet heard about it or the the who are really interested in it? Well, give them both. Give me both! So the big thing I wanna correct to people that think they know about Hydrogen is The evidence has pointed this way for many, many years now, but because the early consensus and the first discussions surrounding the mechanisms of hydrogen centered on something that is now very, very obviously inaccurate, that false narrative perpetuates.

And so I wanna explain how our current scientific paradigm works and the problem with it. So science is supposed to work by friction, by challenge, right?

Truth only emerges through friction and challenge. But academic publishing works based on consensus. It's consensus seeking. And now there are two things that you need to look at.

When you look a scientific publication, you at the data and the methodology. The data in the methodology don't change. You can go back and review that data methodology years later from a different lens.

But then there's the discussion and the conclusions. And that's storytelling. That's interpretation. So the methodology and data, so long as it's been conducted properly, is the objective.

## Hydrogen biomarkers, dosing, and delivery methods

The discussion, the conclusion is subjective. Academic publishing prioritizes consensus on the subjective, on this storytelling. And how the funding works for academics is they get funding based on publishing and high impact factor journals, Q1 journals at a certain rate.

Since the journals are cautious and prioritizing consensus, even when academics don't agree with something, they default to consensus unless they have adequate evidence that consensus is wrong to have a groundbreaking paper that shows why it's wrong.

So we've largely taken the friction in this sense out of the storytelling part of research and publishing. The original story on hydrogen was that it was a selective antioxidant.

and this can be true in vitro so in you know self-cultures and in physical chemistry you can force H2 to react with the hydroxyl radical and peroxy nitrite but the chances of that happening in vivo in the living body are so slim that it's not even worth considering.

Not to mention, there is a mountain of evidence showing that hydrogen often increases oxidative stress in a mild manner. And most people go, well, you don't want that, that's bad, they think.

It's because they don' understand the relationship that oxidation has with reduction in our body, right? There is reductive stress, which is just as harmful as chronic oxidative stress.

And what we want is we something called redox homeostasis, or it's the harmony between reduction and oxidation. Okay. When we're healthy, are able to internally regulate this homeostasis harmony.

And there are various lifestyle interventions like exercise, for instance, that help to drive towards this harmony and they do it paradoxically by increasing oxidative stress and increasing inflammation in an acute transitory sense.

If you look at probably what is known as like the nastiest inflammatory cytokine, which is interleukin-6, it's released from skeletal tissue in something called its myokin role following exercise, Which actually triggers an anti-inflammatory response which drives us back towards proper regulation, proper homeostasis.

And it is the same thing, this release of oxidative stress in a manageable way, when the stress is tolerable and we have adequate recovery leads to our body responding and driving back to homeostasis.

So now we know, actually our mutual friend, Tyler, Dr. LeBaron, was one of the corresponding authors on a paper just several months ago. And this is something that Again, we have known for a lot of years but have been unable to prove, but Tyler and some co-authors were able to demonstrate this in a groundbreaking paper, showing that hydrogen works.

as a mytohermetic effector that it is targeting a specific protein, you know, in the mitochondrial complex three called the risky iron sulfur protein.

It's damaging it to a level that triggers a slight rise in oxidative stress in cell that then activates the NRF to keep one pathway to trigger our endogenous antioxidant response.

And this is why there are so many results showing that hydrogen has antioxidate effects or rather increases antioxidants and lowers oxidative stress because these are in states where people have elevated oxidant stress.

So we're looking at the end point, but we weren't looking how it got there. It wasn't hydrogen is going in working as a radical scavenger. We just knew that wasn't true.

And even if it was true, so why is it any better than any other antioxidant? Why don't we just use vitamin C? And how is doing all these other things that don' make sense?

That was one of the things why a lot of people would look at hydrogen and go, well, this is bogus. It's just a weak antioxidate. So how would it be interfering, how does the hydrogen interfere with inflammation at the cellular level?

A regulatory role also, you know, through nuclear factor kappa beta of KB, right? So hydrogen is again, it's not acting as an anti-inflammatory, It is regulating our inflammatory response.

And this is critically important for a number of reasons. One, it's demonstrating that hydrogen is working like a lifestyle intervention, like exercise, cold exposure.

It's not working as a pharmaceutical. allows us to one, talk about the research on hydrogen with a lot less restrictions, because we can talk this regulatory aspect and not say hydrogen is doing X, Y, and B.

Hydrogen is simply helping our body function as it's supposed to, just like exercise is helping your body to function, as its supposed movement. Okay, so let me ask you this, because this is a question that I know a lot of the viewers and listeners, we have a lotta doctors that tune into the podcast.

If one of our patients is being put on molecular hydrogen therapy, it being inhaled, the water bottle, or whatever it is, what would be the biomarkers or data points that we should follow to see that the molecular hydrogens is actually doing something for our patient?

I think it depends on the patient and their current state. And then it also depends what delivery method you're using, whether you are using inhalation or drinking hydrogen water or bathing in hydrogen, because all of them have a different distribution.

throughout the body. And for the practitioners listening, this is critically important, right? Because when you drink hydrogen water, for instance, the dosage is far, far less than when inhale it.

However, we have the pharmacokinetic data and drinking hydrogen leads to higher concentrations of H2 in the gut, right, and, you know, in liver and into, the digestive tract, throughout the digressive tract.

So there are certain indications where hydrogen water, especially high concentration, high dose, could be superior to say hydrogen inhalation because of that distribution.

When it's getting into the guy, it is triggering secondary messengers, interacting with various hormones in the gut, like GLP-1 and ghrelin, which with the hydrogen tablets we've shown to regulate, you know, and not, I want to be very clear, we are not activating specific markers, We're not throttling them on.

We have shown regulation, right? With GLp-one, for instance, attenuated false rises in rodent research when we try and induce obesity, right, because GLP-1 will do the same thing, kind of insulin does, it kind overreacts to a new problem, and then it breaks the cycle.

So we've atteniated the overaggressive rise in GLPM-I in induction of obesity in Rodents, but then in humans, with chronic obesity, we have raised their broken mechanism to restore it back towards normal function.

We've done similar things with ghrelin, with people with obesity. And it's an interesting thing about ghrelin. People think of ghrellin as the hunger hormone.

It does a lot more. Its more protective, it regulates glucose homeostasis, insulin response. but with ghrelin we actually want the peaks and valleys. When we're hungry we want high ghrelin to trigger us to eat and after eating we wanted to plummet.

But in metabolically impaired overweight people it kind of just sits midway the whole time and this is why if you look at really obese people they often don't eat big meals.

And you look and you're like, how is this person so big? They're not actually eating that much. But then you spend a week with them or even a couple of days with him and just see them snacking all the time because one of the many things broken in their metabolic function and these various hormones that trigger various neurochemistry involved in satiety is the ghrelin system and they're just kind of snacky all of time.

Because it's just kinda in the middle. So in these obese people, we restored the peak and valley of the ground. So hydrogen water gets into the gut, does these things a little bit better, restores the microbiome better.

It has a lot of secondary effects that are different than something like hydrogen inhalation, because when you inhale hydrogen gas, it's getting to your lungs and then rapidly diffusing into your bloodstream and circulating through your whole body.

So it is obviously getting far higher levels to lungs, to heart, brain, skeletal tissue. through the inhalation, it's working in this role as the mytohermetic effector, as this stress on the mitochondria.

Whereas with drinking the water, its having these secondary triggers, like interacting with the microbiome, these various hormones, driving liver homeostasis.

So it doing these a lot more substantially than hydrogen inhalations does, And it has a small function in the mitoharmetic capacity in specific tissues.

So you look at the patient and what is their issue, and then you at look the route you're administering, so how it's gonna distribute. And then after that, we still don't have enough data to know dosing.

That's what we need to get into next. And it's one of the reasons why Dr. LeBaron and I developed this inhalation unit over seven and a half, eight years is because we recognized the need one for safety, but two for precision dosing.

It's difficult to do clinical research even without a machine like ours because researchers can't properly incrementally control dosage with like drugs and various therapies.

We scale them incrementally to find the peak therapeutic effect before it starts becoming harmful to too many people. We haven't done that with things like hydrogen, we're just guessing.

And then with something like inhalation, if you're using a nasal cannula, you don't even know what dose someone's getting because everyone has different ventilation.

So person A could be getting 10 or even 100 times different levels of H2 than person B. And that's why we developed this closed system so that every person, no matter if it's a 90 year old grandma hyperventilating or a 300 pound bodybuilder practicing deep breathing, will get the same level of h2 into their blood.

The same concentration. So once we have this data better, we can look for different markers, because I mean, hydrogen in general, think of it same as a wide ranging benefits of something like exercise, right?

Hydrogen has shown, you know, potential positive impacts in something, like 200 different models across every organ in the mammalian body. So the amount of markers you can I know hydrogen, when you combine it, I've heard from a couple of researchers, they estimate that hydrogen has been shown to positively impact something like 10,000 different gene expressions.

So there is so much you can look at, but again, there's so that you could look in various models if you get someone on an exercise program. Right. Or get some to clean up their diet or get someone starting.

But are there any like main ones that you would say to get a good baseline inflammation markers? Yeah. Yeah, I mean, you can look at various cytokines.

Absolutely. Right, like TNF, Alpha, Interleukin 6. Make sure that if someone is inflamed, right, because Hydrogen as a regulatory agent, you one need enough time to see movement.

This is not a drug that is just shutting down production. Now, when you say enough, what does that look like? So like our metabolic research tends to in the hydrogen tablets, it tends two months is when we start seeing some statistical benefits, three months, starts getting stronger and stronger throughout six months.

Again, if you send someone to start exercising for a week and take their blood test before and after, you're probably not seeing big metabolic changes.

But you come back after three month or six month, your probably seeing massive, massive differences. And this is another concept we can get into, I don't believe that the way we look at statistical significance is adequate for lifestyle interventions like exercise or like hydrogen, right?

Reviewing statistical significance in the way we do is a very good method to determine if a drug that works through the pharmacological principles of single receptor pathway and, you know, is either working to you know, activate or deactivate, I'm losing my words here.

But in that manner, you can use a specific drug to target a specifically receptor and drive a very specific molecular change in a single marker. And you might see off the chart changes from this drug, but nothing else has changed.

Is that good for the holistic health? Sometimes, but sometimes it's not. And what is it for our chronic health that doesn't address the underlying issue?

Now, of course, a lot of drugs, especially for genetic conditions, are very much needed for people that lifestyle doesn' help. But for something like exercise or hydrogen lifestyle intervention, when you're showing modulation, we should actually be looking at befores and afters, right?

So I've been debating with a lot of professors that for these lifestyle interventions, it's more important in how, say for instance in metabolic markers, how it is going to respond to the normal stress, you know?

We should look at the, response to food and the modular capacity.

## Hydrogen, longevity, and metabolic health

So say you're looking at a metabolic pattern, and some of them are changing dramatically, like, you know, glucose, whether it's fasting or postprandial, right?

You should measure both in a clinical trial of a lifestyle intervention, because you should see how the body is responding. And we should also be doing statistical analysis of the totality of markers that are moving.

Because something like exercise or hydrogen might move 18 of 20 markers in a modest manner, but they're all in the right direction. Whereas something a statin will dramatically alters your cholesterol and might do nothing for anything else.

And what leads to better health? And these are questions we need to ask and look at the underlying paradigms of how we are evaluating results. But yes, absolutely, sorry, this was again, a long tangent.

This is information that I think a lot of people want to know. Obviously, we're talking about molecular hydrogen therapy. Now in the longevity space, we talk a lot about lifespan and health span, right?

How long you're gonna be able to live, and then the quality of life. So we know, when you mentioned earlier, you talked about mitochondrial health being part of this process.

We know that mitochondria health is very important, especially for ATP production, which is that energy at the cellular level. How does molecular hydrogen feed into that?

So there's a very interesting story on hydrogen relating to long jet. So, there has been an interesting paper for one that was done in rodents concurrently with elderly individuals with mild cognitive impairments and and the humans got actually a lower concentration than the rodents and rodent stroke drank many more times water and especially for body weight so it led to something like a discrepancy of like 50 times in relative dosing but the Humans had very modest benefits and you know only those with APOE4 allele but the rodents on this comparatively quite high dosage of hydrogen water, it didn't extend lifespan, nor would I expect it to extend maximum lifespan.

But all the hydrogen treated mice, no matter if they took it from young age to middle age, to advanced age clustered at the maximum life span of those mice and none of them developed neurological conditions.

So if you look at the control mice, they were scattered all along the graph and the hydrogen were in this tight bunch, all at maximum. So that's interesting.

We've extended lifespan with hydrogen in nematode worms and worms. And also when taking drosophila fruit flies and under fasting, basically killing them from starvation, the Hydrogen treated fruitflies you know, live quite a bit longer.

And this is actually gets into a hypothesis I have on why hydrogen is important to us and some of the pathways it activates. So hydrogen has been with us since the very, very beginning.

certainly the beginning of the universe, first element and then the first molecule. I just say hydrogen, we're talking about molecular hydrogen. We've made it long into the podcast, but H2 to the molecule of two hydrogen atoms.

So H two molecular, hydrogen was the fuel source for the single celled organism that spawned all life on the planet. And After that, the eukaryotes that became our mitochondria was a symbiotic relationship and one of the organelles expelled hydrogen as a waste product.

And now we've carried a lot of these bacteria into our body. So the way that we produce hydrogen, because we produced hydrogen every day, so long as you have a healthy microbiome anyways, is we reduce it by fermenting fiber in our colon and our lung intestines.

And why this is important is because during the majority of human evolution during our hunter-gatherer days, we consumed 100, even 150 grams of dietary fiber a day.

Now, the average person today consumes maybe 10 to 15. The RD is 30. But someone on a standard American diet might get zero, one, two, three grams of fiber.

So bacteria is like any other living thing. If you deprive it of its fuel source, you kill it. And now so many people today don't get any fiber, so even if they try and add it, they're not getting hydrogens.

Now they are getting no hydrogen. during the same hunter-gatherer period, just, you know, and this is again, a speculation, but I imagine that, we know that we primarily were trying to hunt and eat meat as our food source.

But we were also consuming plant foods. And plant fruits back then, whether they were grains or fruits or vegetables, had much higher levels of fiber than they do now.

We have selectively bred for 10,000 years the fiber out of our food. we didn't do it to get rid of the fiver, we made it, did it make them sweeter and pumper and juicier, right?

So we've removed the fibre from all these food sources. Back then that wasn't an option, obviously. So we know that even carnivores will eat a little bit of grass, like you'll see your cat eating grass for its stomach.

So, we were always getting fiber, but what would we have done when we couldn't kill something, when had a failed hunt? We would have been stuffing our faces with as much plant food as we could get to stave off starvation.

I believe, and then we would have produced tremendous amounts of H2. And so I believed that H two is a signal that starvation is coming. That we evolve to recognize that signal, right?

So that when we get this flood of each two, our body hunkers down and gets a lot more efficient. And this is why we, perhaps why, should say perhaps, because it's just a hypothesis.

It's perhaps what hydrogen is shown to activate a lot of the same stress pathways that fasting caloric restriction do. Because of this, it tells our body to start responding.

before the actual starvation comes. But today in the modern age, the starvations is never coming. So we can use it as a tool to get this result without having to starve ourselves.

Now, in terms of more evidence, there's some really interesting stuff. And this is again, this correlative evidence on population-wide. In studying centenarians in Okinawa, so people who have lived over 100 years old, it was found that they have higher breath hydrogen than the average young person, including their direct descendants, showing that it's not genetics that has allowed them to carry H2.

It's something about their lifestyle, their diet that's kept their microbiome healthy to produce this H two. We also know that as we age, H2 tends to decline in the breath and methane rises.

Now this can happen because as our hydrogen producing bacteria die out, methanogens move in and these methenogens produce methane by consuming hydrogen.

And we know as methane rise, so does all cause mortality in basically every chronic disease state. Right. Now, so we did a clinical trial, six month RCT double line placebo controlled with hydrogen tablets.

And we saw some interesting effects in various phenotypic biomarkers of aging. We lengthened telomeres, we improved some DNA methylation, some brain metabolism.

we almost doubled TET2 in the blood. So have you ever seen like the vampire mouse research? where they take the blood of a young mouse and put it in old mouths?

No, I know Brian Johnson did that with his blood or his son's blood. Yeah, yeah. I think he did. Ben Greenfield just went to somewhere in Austin to get that done too.

So, you know, like young plasma, so in the rodent research, we know that the young Plasma, one of the key markers we see increases is this tattoo. Hydrogen did naturally, this marker in young blood, this tattoo is primarily linked to increasing like skeletal tissue strength.

Okay. Right. And interestingly in this trial in real world benefits, because you can move a marker, but what did it actually do? Right? Did it help people?

And so the average age in the study was 77 or 78 years old. It was done, it was recruited in spring of 2020. So during lockdown, these elderly people were scared, they were on house arrest basically, They couldn't go to the gym, couldn' exercise.

Despite this, in six months, In the hydrogen group, It improved some quality of life scores, such as pain scores. And it improved, you know, tended to improve strong trends in their sleep scores, but also statistically improved some markers of the senior fitness test.

So somehow 78 year olds locked down in the pandemic stressed out could sit and stand more times at the end of six months in hydrogen group only. not in the please so you would say that it definitely increased energy levels within the body and Prevented a lot of fatigue in these people I believe so.

And it is an interesting thing that we saw in our first decent sized clinical trial years ago. Tyler LeBaron, Dr. Lebaron was the first author on that paper and it was a six month double blind RCT on metabolic syndrome.

Some of the professors on the paper didn't want to publish at first the weight loss data because the hydrogen group lost six pounds. Nothing crazy, pound a month, right?

They lost some weight. Yeah, but the placebo group gained weight, right? When you're looking at people like middle-aged, old-age with metabolic syndrome or relying like diabetes, you are not expecting weight loss.

What do you think the weight-loss was related to? So here's the thing. Well, we now know that there are some mechanisms that hydrogen can actually lead to weight lost.

And we've shown improvements in body composition and I think eight clinical trials now. Maybe more with some of the ones that are about to publish. I lose track of what's published and what is in peer review.

We have more research underway than we have published. So it's always coming out. But in this study, the metabolic impaired people had journals where they were tracking their diet and their daily activities.

And around the three month mark, in the hydrogen group alone, a number of the participants started writing in their journals that they were eating healthier, that there were going for walks at night, you know, in the evening after eating, which they hadn't done for years.

And some of their professors wanted to not publish that part of the result saying it was a confounding variable. And myself and Dr. LeBaron were arguing, no, this is a story.

This is part it. Why were they getting more active? Because they felt better. this how we have to look at hydrogen, This not a drug. Right? This a lifestyle intervention that is leading to people to give them a little bit more strength to maybe make another better decision.

and then you pile those wins, those better decisions and start going. This is why I think hydrogen's future is actually as a junk therapy along with other therapies to compliment everything else that we're doing.

Not as standalone, not as… You know, a medicine, right? But, you know with the tablets, we're exploring delivering drugs, as a functional excipient because we are showing in rodent research that we were potentiating benefits from the drugs and reducing side effects and you can lead to lower dosages of the drugs, less harm and more benefit.

Why not? With the inhalation, we can pair with things like CPAP machines or general anesthesia and use our technology and improve outcomes. pairing it with this to aid these other techniques we already have.

With people in lifestyle, just for general health, pair it up with your exercise. Pair it the other things you're doing because hydrogen isn't magic. It's just helping your body remember what it's supposed to do by acting as a signal.

It works good in combination as a stack within a lot of the other things that you're stacking exactly You're not gonna just eat the dressing by itself.

It makes the salad just a little bit better a hundred percent and this is is one of The most interesting things about hydrogen because there is a There are so many therapies that interfere with each other.

We have not found anything that hydrogen interferes with. It doesn't always have synergistic effects, potentiate. Sometimes it just seems to be the same, but it's never been a contraindication.

with anything that we've studied in conjunction with. And usually, it has shown strong complementary or synergistic results from other lifestyle interventions and other approved medical therapies.

## Hydrogen as a performance stack and book discussion

I think this is the future of hydrogen, both in a research sense and a practical application, in the society sense. Like that Alex You know we live in a world of a lot of stimulants, but you go to the gas station, and that's all you see everywhere You see them in capsule form you.

See them And all the different little bottles and cans would you say that hydrogen will replace stimulant by improving efficiency? So it's interesting, because I want to talk about this from two angles.

Hydrogen inhalation is something that's very interesting. I'm using it, and so are a number of the big names that we have on our hydrogen inhalations device for our afternoon naps.

You know, like, I don't sleep a lot. I sleep maybe five hours a day. My mind just is going, but I'm sure like me, if you're on a five-hours-a-day, some days you are just wiped and like a 15, 20-minute nap, you know?

gets it back gets you back in there right so let's say two or three times a week i need an afternoon nap to go and perform at a high level again uh it is the darndest thing but hydrogen inhalation almost immediately puts me to sleep really right uh and i've heard this from several other people but then you wake up feeling like refreshed incredible i feel like i have gotten a full night's sleep After what, like a 15-20 minute nap?

It takes me 5-10 minutes to fall asleep, usually, setting up the machine doing. So maybe I'm on the machines for 30-35 minutes, but I conked out for 15, 20 minutes.

Wake up, wipe, okay, I am ready to go, and like wired. Conversely, with, you know, high concentration, hydrogen tablets, and it's the number one anecdote I hear, when I talk to people and when talk with the brands and what they get from their customers, we have two clinical trials on it, is people get it sort of as not a stimulant, but a stimulus.

It boosts their brain in the moment. So actually with the tablets, we have two clinical trials head to head with caffeine after acute sleep deprivation, 24 hour sleep depravation in young, healthy people.

The one we saw, equivalent improvements in the attention network test as caffeine with H2 head-to-head, but hydrogen affected orienting, whereas caffeine effects alerting and did in this trial.

So we did a quadruple crossover designed and put everyone under fMRI with the hydrogen tablets and caffeine. So there was a placebo, placebo group, a hydrogen placebo a caffeine placebo and a Hydrogen caffeine group.

And every participant did every all four groups. Okay. Like 20 of them acting as their own control. It was really

ambitious, you know, study. And it found that hydrogen, either on its own or with caffeine, had a substantially more robust improvement in brain metabolism in more regions of the brain than caffeine did, specifically affecting like choline creating issues.

So it was interesting. So hydrogen, you can't think of it really as a stimulant, hydrogen water anyways. It is restoring some markers of brain metabolism back to where they were pre-stress, pre the sleep deprivation, for at least a short period of time.

Whereas hydrogen inhalation, atleast in my case and my wife's case, after she gave birth she was barely sleeping at all. And she couldn't go back to bed after, you know, breastfeeding.

I'd tell her to go on the hydrogen inhalation machine, and if she'd lied back in bed, she wouldn't fall asleep, but she would go in the inhalations machine and she could knock out for a couple hours.

Right. And it's very interesting because we keep hearing this and I actually really want to research this, you know, because anecdotes are one thing, but I want, I wanna see the data.

You want us to see data? Exactly. Absolutely. Alex, You got this book here, man. What motivated you to put this together? So I had the rough drafts done.

of seven books six years ago. That were never and ever projects on completion as my business got bigger, as stresses pushed me, both personal and business, and I turned to the drink more and more.

And I just stopped writing. This was one of them. Then, you know, when my wife got pregnant, I decided to quit drinking and decided, uh, started a, a experimental drug called the Tessa fancy, right.

Which is a triple agonist of dopamine serotonin and norepinephrine because it was being explored for Alzheimer's and Parkinson's. And I'm showing some results, but they noticed a big weight loss because.

Hearing people have food addiction. And I'm like, well, if that's working for food addiction, it should work for alcohol. And it certainly did. So I am on a low dose that lower than the clinical trials.

But then I want to fix my brain because I've been drinking five, six days a week for many, many years. And so I basically started various, uh, neuro repair peptides, just to see about getting my brain back.

And, you know, within a couple of months, my brains just started firing on like all cylinders. Like ideas started emerging. What peptide were you taking?

Uh, so, dihexa, semax, c-max, and saline. Oh, all three. The dihexid, you were doing the cream on the neck or the capsule? So actually I had massive headaches.

I dizziness. You know, do deep dives and look for various supplements and adjust dosing. So it was a rough couple of months, but once I figured it out, like just everything was firing on all cylinders and I quickly figured out a bunch of solutions for my businesses to get them rolling again.

And then I was bored, very, really bored. There's this thing I'm talking about in my second book, and there's a debate on what motivates us. So our brains are pattern recognition machines.

Some think that we do all our actions for satisfaction, which is just, you know, it's preposterous, in my opinion, because all the data suggests otherwise.

Others say it all to alleviate anxiety, Which makes more sense, but it seems insufficient. And I would argue that everything is motivated by survival, survival of our physical self, and survival very genetically, right?

However, If those, if the challenges needed for our own survival and our perpetuation of ourself are sufficiently

handled, what does our engine do? What does pattern recognition do, that's where curiosity emerges.

And we don't shut our brains off. No, we can't right not unless we use something like alcohol or a drug, right? So when our curiosity emerges we have a choice we either direct it to a purpose or or we let it transmute back into anxiety.

And when it goes back to anxiety, the anxiety is a lot worse than survival anxiety that's when you get into existential angst, that when start creating problems in your own life to solve.

That's where you start self-destructing. So when I got bored, I quickly started thinking about what can I do? And I turned back all these books and I was working on them and then I'm like, okay, I had the first idea.

I pushed out a first book because it was more timely. And I used some editors and I allowed them to use AI to clean up my sentence structures and was looking at paragraphs here and there and had already written that book.

So I thought it would be fine, right? Because I'd already every chapter as blogs or essays that I was compiling together and I released it and i was happy but then I read it phonologically I'm like oh my god like the AI has stripped the nuance and the complexity and changed my voice and oh wow I pulled it off the market like a week after and then i went through like, a crisis about this and, then, I thought okay well let's restart it over and all of the books I was working on, and I look at a reality from a systems lens.

Everything is connected. But to get a system operational, you need to know the sequence that things operate on. And so I went into thinking about sociology and thinking, there is the age-old argument, conservatives say that We are individuals and we're responsible for our own actions and liberals say that we are the product of a system.

And so the system forms our actions, and really it's both. Because humans make up the systems. So we form the the which then alters us and it goes back and forth.

However, if you go to the chicken and the egg argument, a human being can exist without a society, without systems and structure, but there can be no systems, structure and society without the human beings.

So we have to go to the self. First, and to solve these big challenges facing society, we need strength. And so I started really thinking about strength and what is the purpose of strength?

What is strength for? And how did we evolve strength, well, We evolved strength to follow people who were leaders, not because they wanted to lead, but because we were able to protect the group.

because they had that purpose, that ethics and morality to them, which is why we evolve that. And in turn, this isn't a hierarchical argument. This is a function, a systems argument, because a leader that protects those following is protected by the following.

You know, it is symbiotic, right? And when we're hunter gatherers, if a leader was not protected the following, the falling would leave or kill them while they slept.

So we selected our leaders based on this strength, but also this ethical strength and this duty. But as societies became more complex, our idea of what a leader was and is was transformed into a way that basically anti-social personalities like psychopaths could emerge and use domination and coercion to force subjugation, which is not how we developed organic hierarchy as human beings.

So I started thinking about that problem, and my books get a lot more societal level, philosophical, political, but it all starts with the self. And the only way we can solve any of this is if enough people gain enough capacity and strength in order to change things.

So that we can change the systems, then in turn, we change ourselves, change systems to then change yourselves again. Get the loop going how it should be going instead of askew.

This book, it's two sides. There's the body. and there's the mind, and they started opposite covers. And that was part of the conundrum because I wrote The Body and the Mind and my editors are like, which is coming first?

Well, neither can come first because they're connected, they are equal. So I had to do the double sided, double covers, the meet in the middle, right?

And in the middle are interlude chapters on kind of the weight of strength and the purpose of strengths, right, for society. And the Purpose is, you can, and to get it back to purpose, if you have a strong body and a weak mind, a weapon.

## Closing thoughts and where to find Alex

If you a have strong mind and weak body, it can be a Weapon too, Right? If You have A strong Mind and A Strong Body and You Have Purposes, then it's a very dangerous And so we need to gain strength in order to move towards purpose to satisfy our will, our spirit, or our soul, whatever you wanna call it.

And when we do that, we lift everyone else around us. Wow, I love that. Man, that's gonna be an interesting book for me to read. Alex, as we start to wrap up here, if there's someone who resonates with today's message, right, understanding what all the problems that we experience today, what is that one thing that you can leave them off with?

I think we need more dialogue, right? And I, I thought I said it earlier, we all want the same things from an abstract sense. We all a better society.

Absolutely. All want better health. drastically different interpretations of what's going on. And so as such, conclusions on what we should be doing. The only way we can find truth and work towards what you all want is by communicating with each other.

Communication and discourse is what our democratic society is built upon. It's the most important pillar. I think we've lost it. Yeah. Yeah, okay, I can see that.

So if somebody wants to find you, where can they find ya? So alextarnova.com is my website on Instagram, LinkedIn, YouTube. I've started putting out a lot of content, readings from the book.

As for the books itself, um, decided to self-publish and I did that because the audio and the PDF are free on my website and the book is being sold. We're in the process of transitioning because I just got it approved through a non-profit.

So all the funds will go back into advertising for the books. I'm running these at a massive loss. It is on Amazon. Amazon charges what they do and they take something like half.

So you can buy the hard copy on Amazon or the audible or Kindle. On my website, you could buy a hardcopy, which then will go more into the nonprofit or download for free, either the PDF or audio.

Awesome. Awesome brother listen, that'll be the same for every book that's amazing man. And this was very informative We had a lot that we you know went into here and there was a a to unfold if you will so Alex I appreciate you man This is gonna be a great podcast for people to dive deep into man Thank you.

Yeah. Thanks again for letting me ramble down a million tablets. I love it brother. Appreciate it Amazing guys we just took a deep dive and just unfolded a lot of this stuff man that you know it was interesting for me to really dive into Alex's head and understand him he has a unique mind a mind that leads many other people.

When you find someone who's an inventor, an entrepreneur, a researcher, these are the individuals that are making a lot of the change that we need in our world, especially when we talk about changing the course of medicine to make people well.

So, guys follow Alex's content. He's very active online. I'm doing a lot of podcasting and speaking to a lots of experts out there. Their technology, we've partnered up with them utilizing their molecular hydrogen inhale with the reservoir bag.

So you're going to see me doing content behind that and a of our doctors talking about it. Take this podcast, share it with your friends, your family, there's someone out there who needs this message as well too.

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