



## Episode 220: The Most Effective Way to Use CBD (& Why So Many Don't Work) With Ojai Energetics

Child: Welcome to my Mommy's podcast.

This episode is sponsored by Fabletics. So here's the deal- if you're anything like me and workout pretty much 5-6 days a week and sauna daily, you go through an incessant amount of gym clothes everyday, which means more loads of dirty laundry. I find myself always buying more gym wear to avoid this issue but I also won't shell out hundreds of dollars for the really pricy gym wear (I'm not going to name names) and was tired of cheap gym wear that wears out quickly with lots of washing. My solution to this predicament is a brand call Fabletics. If you haven't heard of them- you're missing out! Fabletics is a fashion focused activewear brand founded by Kate Hudson and its mission is to empower women by making a healthy, active lifestyle accessible to everyone because of its exceptional price point. No matter if you're ready to zen out in hot yoga, crush it in a crossfit class or simply take a stroll in the park, Fabletics has you covered and they carry gym wear suitable for any type of workout. Fabletics IS your one-stop shop for affordable gym wear and ALL of their designs are created in-house. Plus, they are cute enough that I find myself wearing them everywhere, not just to workout. I'll just throw on one of their pullover tops for a cute outfit. Before I forget, Fabletics is offering an incredible deal you don't want to miss. You can get 2 leggings for only \$24 (\$99 value) when you sign up for a VIP. Just go to [fabletics.com/wellnessmama](https://fabletics.com/wellnessmama) to take advantage of this deal now. Also free shipping on orders over \$49. International shipping is available and there is absolutely no commitment when you purchase your first order.

This episode is brought to you by Genexa, the first ever organic and non-GMO medicines that use patented technology to create formulas that work, without the dyes, the artificial sweeteners or harsh preservatives that are found in some medicines. Founded by two dads on a mission to find better products for their own kids, I love the commitment to quality Genexa has and I love how well their products work. One of my favorites is their homeopathic arnica tablets. I recently got back into power lifting and running and the first few weeks... ok first few months... were a little rough. The Arnica Advantage and the pain crush topical cream were a lifesaver for me. To shop their full line of organic and non-GMO medicines, go to [Genexa.com/wellnessmama](https://Genexa.com/wellnessmama) and use code WELLNESS for 20% off your order!

Katie: Hello and welcome to "The Wellness Mama Podcast." I'm Katie from [wellnessmama.com](https://wellnessmama.com) and today will be all about CBD, which I get so many questions about, because I am here with Will Kleidon who is the Founder of Ojai Energetics. He founded it in 2014 and his goal was to provide the purest, healthiest, and most ethically produced cannabidiol or CBD on the market and basically to give people a viable supplement for living the healthiest life possible. Four years later, his business is doing just that and they're using this science-driven organic nutraceutical to achieve optimal physical health. We're gonna delve into why this is actually such an important compound and why most of us are not getting it enough. But, Will, welcome and thanks for being here.

Will: Thanks for having me, Katie.

Katie: I know I've gotten to jump in and kind of geek out with you on this topic before and you are so well-versed at it so I want to make sure we maximize our time. And to start, can you walk us through what the endocannabinoid system is and what exactly it does in the body?

Will: Yes. So basically we've got these receptors called cannabinoid receptors in our body and it's actually, we have receptors in every single system of our body from skeletal to digestive to respiratory, cardiovascular, reproductive, nervous system, every single system has endocannabinoid receptors and including at a cellular level. We've got cannabinoid receptors in every cell as well. So from systemic to cellular, we've got these receptors and the functionality of this system is to maintain homeostasis for the entire body and all of the systems, and homeostasis means that everything is operating at the right level and firing at the right time. So you can think of it as like the conductor for the symphony of our body. And so arguably, it is the most important system in that its job is to make sure every other system is running at optimal levels. And one of the ways that it does this is through buffering oxidative stress.

And so oxidation is like rest for our cells and our body. And so the more we oxidize, ultimately, oxidation is what, spare accidents or trauma, is what causes us to die and age. And so its function, one of the ways that it maintains balance in all these systems is to make sure that when oxidation and oxidative event comes in, which is stress essentially, whether it's physical or emotional, that it blocks the effects and kind of buffers them out. And so as modern humans, we're facing more consistent oxidative stress than any other generations on the planet. We used to have like a saber tooth tiger where you'd have a bump up in oxidation for a couple of minutes and hopefully, you get away, whereas, now, we're bombarded 24/7 from petrochemicals and industrial exposure to, actually, the amount of information overload and how many choices that we have as modern humans. So they actually ran a study showing that when we have to pick between more than six options, there's a notable oxidative stress response in the body.

So our grandparents would grow tomatoes that were organic. You didn't have to call it organic, everything was organic two generations ago, and then make the tomato sauce or can them or whatever. Now, you go into the grocery store, you got 20 different options of ketchup. And just needing to decide and pick creates a notable oxidative stress response. So it's just one out of many, many ways that we're getting hit with oxidation. So it's really more important than ever before to have a healthy endocannabinoid system. And so that is a good overview of what it is.

Katie: I'd love to talk about the name a little bit, too, because I have noticed a trend in some aspects of the health community of people kind of largely ignoring the endocannabinoid system or thinking it's not important because the name sounds like cannabis and they kind of lump it in with cannabis and, of course, all the, like, small controversy that can surround that. So I'd love if you could talk about, like, what is this? Is it some system that we've recently invented or was it just named based on what we were noticing in the literature, like, what is the history of this?

Will: Awesome question. Yes. So every single vertebrae and then a couple of non-vertebraes that we know of have endocannabinoid systems. And so it's been around for quite a while. However, humans have a particularly robust one and the way that it was named, and we need to come up with an easier sounding name, but "endo" meaning "internal," cannabinoid, which are compounds that we... I'll explain the etymology of that in a second, and then systems. So basically, it was discovered in 1991 by an Israeli doctor and we knew

about cannabinoids or external cannabinoids, phytocannabinoids, well before the system was discovered, but essentially he realized that if the...and it's named after the cannabis plant because cannabis has the highest concentration of phytocannabinoids by far than any other plant, but he realized if they're having an effect in the body, then they have to be targeting receptors that exist in the body. So that led to the discovery of the endocannabinoid system.

So it's relatively new, although predominantly in the United States, due to the prohibition, it got largely unstudied and kind of pushed aside and it's still, when we work with, we work with all sorts of different MDs and it takes a minute for them to adjust, to realize, "Well, why wasn't I taught this in medical school?" But other countries such as Israel and Spain have been way advanced in terms of studies of this system for a long time. And, in fact, CBD was discovered before the endocannabinoid system was discovered and that's been rigorously studied for decades predominantly outside of the United States.

But the naming of the system is because these cannabinoids are predominantly from the plant and then we also actually produce them in our body and we knew of two, and one is called anandamide named after the Sanskrit word for "bliss," "ananda," and that was named by the Israeli doctor who discovered it and also the endocannabinoid system, and then also 2-AG which is way less of a cool name. But we know of two that we produce endogenously or in our body that specifically work on the endocannabinoid system. Anandamide targets predominantly CB1, which is at a systemic level found mostly in the brain and the nervous system. And then 2-AG directly targets CB2 receptors which are in all the other systems of the body. And that at a cellular level, every cell has both CB1 and CB2, so they interact from cellular to systemic that we produce naturally, but it turns out that we actually have coevolved with this plant, the cannabis plant for millennia and it is one of, if not the first plants that humans domesticated.

It was documented in 10,000 BC in China as a domesticated plant in all likelihood and there's evidence showing pre-agricultural, one being around 12,000 BC, of pottery with, the rope had degraded but the fiber imprints left have been linked to likely to be from cannabis rope. But essentially since 10,000 BC, then the Scythians found it in China and Asia, where it seems to originate from, millions of years ago in that region, but the Scythians took it and brought everywhere they went. There's well documentation that they were using it for psychoactive purposes in the higher THC varieties as well as for rope and food and fiber and medicine, and everywhere they went, they brought it. And then also anywhere the Vikings went, they took cuts of it from Caucasus Mountain regions and spread it as well as, then the Scythians brought it to the Romans who then brought it everywhere they colonized, including Britain.

And then the UK, anywhere that they colonized, would then take cannabis and it was actually required by law to grow in Virginia and the colonies. One of the main setups for the U.S. colonies was for hemp production. And so it's been the most ubiquitously used and spread plant in modern human history. And through every iteration of different, going from hunter-gatherer to agricultural, then from use for nautical ropes and exploration and to the industrial eras used that for lubrication of machinery, oil, varnish, as well as production of textile and then up to the '40s where we then artificially made it illegal and cut it completely from production in the States. But every single era that it was used, it was commonly fed as animal fodder, as well.

Anyone who is raising animals and domesticating plants, they would take the greens and they would give it to the chickens or the pigs or the cows.

And so there was recently a study done in Colorado where they had hemp-fed chickens and they looked at the CBD content in the eggs from these hemp-fed chickens and it was up to 1%. So we're talking a substantial amount of cannabinoids. And not just CBD, there's CBC and CBG, and actually 110 different cannabinoids that we know of and then 420 total compounds that we know in the plants from terpenes and bioflavonoids, so. But anyways, all of those were present in high amounts of CBD in these eggs. So people have been consuming indirectly for thousands of years these micronutrients and it turns out that just like B vitamins, and B12, in particular, we produce them in our gut from our flora. We also need to have a dietary intake of B12 to have optimal levels and it's actually no different with cannabinoids and CBD.

So we artificially cut these compounds out of our diet after thousands of years of evolving with this plants and then simultaneously went into the modern era where we upticked the oxidation. So we essentially one-two punched ourselves and created artificial depletion in a mass scale. And so, everyone's endocannabinoid system, unless they are having a dietary intake of high CBD and a full spectrum of cannabinoids, not just...and I'll explain what I mean by that in a second, but if you do not have a dietary intake of these cannabinoids on a regular basis like our ancestors did and in this environment, you have a way low-operating, functional endocannabinoid system.

And because this system's job is to regulate balance for all the other systems, it shows up differently on your epigenetics and your exposures, but the results are pretty unpleasant. And one of the main nutrient deficiencies we see due to a idling in the cannabinoid system is anxiety, pain, and sleep issues which are kind of the trifecta of what faces modern humans. And when you get an adequate level of cannabinoids back in the system, those three go away and stay away. So there's a direct link there, but that's kind of the, why it's called the endocannabinoid system is because the cannabis plant is the primary producer of the external cannabinoids, we've coevolved with it and it feeds the system and actually helps synergize with the cannabinoids that we produce internally.

Katie: That's super fascinating. And for me, the light bulb moment and kind of when I realized how important this was, was realizing that I kind of compare it almost to magnesium, for instance. This is something that used to be at a much higher level in our food supply. It was something we were exposed to regularly and then now, because of modern practices, we aren't.

Will: Yes.

Katie: Same with CBD, I finally understood, like, this is something we were just naturally getting for pretty much all of history and now we're not.

Will: Yeah, exactly.

Katie: Yeah, it's super fascinating. I think to clear up any confusion also, I think it's important if you could explain the differences because it does get lumped in with just general cannabis. What the difference are between things like CBD in these molecules you're talking about and, for instance, just like medicinal cannabis that's now legal in some states? Can you give us the distinction there?

Will: Yeah. So basically, CBD is completely non-psychoactive and one of the ways that it works in the body is it lowers this enzyme called FAAH and that enzyme is what peaks with an oxidative response. So it naturally buffers that out and it turns out that FAAH destroys this compound called anandamide that we produce internally and essentially keeps us in this negative feedback loop because the body tries to use the anandamide to buffer the oxidation. But when there's that response, the enzyme increases, that destroys it so without the dietary input of CBD, you're stuck in a negative feedback loop and what it does is it actually, when you get it in at the right levels, it increases the half-life and circulation of anandamide in the body.

That's just one of many mechanisms that it does, but it's important to note that CBD by itself is vastly ineffective compared to CBD with the other cannabinoids including trace amounts of THC and then the terpenes and bioflavonoids because I liken CBD to, like, the trumpet section, it's loud, it's well-known, but CBD by itself is just the trumpets. And when you have a full spectrum extract with high CBD in that, you've got the trumpet section with the entire symphony orchestra. And so the guy who discovered the endocannabinoid system and studied it noted that CBD isolate by itself was vastly ineffective compared to the full spectrum and he calls it the entourage effect. So they all interact with each other in different receptors in the body in a very complex way that we're just kind of scratching the surface of directly how, but we know some mechanisms quite well.

But the medical cannabis, traditionally, now CBD genetics are kind of entering the pool from the past decade, is basically when they got reintroduced but they are high THC, low CBD. And what the body really needs to have a healthy endocannabinoid system is high CBD and low THC. That gives us homeostasis, whereas high THC and low or no CBD throws us out of homeostasis slightly, not terribly. It's a lot safer than alcohol but it does throw off the functioning of the endocannabinoid system particularly in the brain because THC targets the CB1 receptors and we're already depleted in anandamide. And so kind of that's where the mental fogginess comes and some of the downsides of high THC, low CBD. So that is, it's kind of like tomatoes, there's different varieties of tomatoes. You can have beefsteak or you can have cherry tomatoes. Cannabis has different varieties, some with high CBD and low THC, others with high THC, and naturally occurring, there would always be a higher amount of CBD and it was only when we had prohibition where people started selectively breeding for high THC starting in the black market and then going into medical that we were inadvertently breeding out the CBD which was there to stabilize and counterbalance any negative effect of THC.

But cannabis...and so hemp is a legal definition, not a botanical definition. And so after prohibition, because the U.S. needed it for industrial purposes, the rest of the world needed hemp because we've relied on it for

millennia. They had to come up with a way to distinguish psychoactive, the recreational or drug side from the industrial side. And so this guy in the '70s, this Canadian doctor or scientist who said, "Basically, I'm drawing an arbitrary line at 0.3% less THC, that's all hemp, anything above 0.3%, that is marijuana." And he noted that this was an arbitrary line. The psychoactive concentration of THC is typically above 1% for most people. So the definition of hemp is well below the psychoactive threshold and high CBD, low...CBD actually counteracts some of the psychoactivity of the THC itself. So innately, these higher ratios of high CBD, low THC is nonpsychoactive and that was the goal, is to distinguish psychoactive versus THC that gets people high.

So essentially what you really, the body doesn't care if it's coming from, if we call it hemp or not, but it wants to have an optimized system, it's a high level of CBD and below psychoactive threshold presence of THC, and then CBC and CBG and a variety of other cannabinoids. Was that clear?

Katie: That was, and that you, I'd love if you could elaborate a little bit on the other cannabinoids because, like you said, CBD, most people have at least heard of, a lot of people have tried. The other two, I feel like people don't even have a passing understanding of.

Will: Yeah. So they all work better in conjunction, right? Not isolated, but essentially there's over 110, there's about 10 that people really have any clinical idea of what they do. CBG is known for stimulation of bone repair, neurogenesis in the brain, and it's got very strong antimicrobial properties. CBC has antimicrobial, it's been demonstrated for anti-immunogenic properties. Also, it's got a lot of promise for depression. And so those were the other two. CBN, people may have heard of that, it's much more sedatives in nature and does a lot more than just that but that's kind of the all-star cast, right, currently.

And then there's the terpenes which are, cannabinoids are made up of terpenes but these compounds that, essentially, the actives in essential oils, but what cause things to smell and taste are terpenes and they are extremely important in the cannabis plant. Cannabis and hops, they're the only two cousins of the Cannabaceae family. And they both produce the most kind of diverse range of different terpenes as some can smell like oranges, another can smell like diesel motor fuel and some, they're extremely diverse and those are all the terpenes. And it turns out that the terpenes serve as like, kind of like little conductors or like tugboats to the cannabinoids. And they go to where...they have a set path, so like limonin which is in lemons and also cannabis, it smells, that citrus smell, that will target the brain as well as the gut predominantly. And so when you combine...when in the presence of the cannabinoids, they will attach to like the CBD and pull it and guide it towards the CB2 receptors of the gut and also receptors in the brain.

And then linalool, for example, which is found in lavender, predominantly in other plants, but mostly found in lavender as well as cannabis, targets more on calming and sedative pathways in the body. And so that will take the CBD and direct it towards those types of receptors. And so the difference between strains that cause people to feel very relaxed versus others and couch locked or other strains that cause people to be much more focused and talkative and alert, typically they're not 100% accurately divided but you can think of it as like indica or sativa strains, for intents and purposes. The only difference is really not the cannabinoid ratios, it's very minimal in variants, but it's the terpenes themselves.

So they're kind of the new emerging stars in a way in that we can get very different effect in the body with the same cannabinoids but use different terpenes to deliver completely different results. And what's unique with the process that we discovered is that we can get them into the body, the cannabinoids, and the extract into the body immediately and terpenes are best absorbed either through inhalation or basically inhalation. So other people are, if they were inhaling it through, like, a vaporizer versus even just putting it in your mouth or smelling it through your nose, you're actually, when you're tasting something, whether it's from cannabis or any type of terpene, it basically, the best way to get into the blood is through inhalation.

So if you're eating something, you're actually pulling these, they're tiny little molecules, they're slightly less dense than gas, you're actually pulling them up into the olfactory through the mouth cavity or if you're inhaling it directly, straight up through the nose, into the olfactory system, it crosses into the blood-brain. It crosses the blood-brain barrier and then gets into the hypothalamus and then goes where they're gonna go, so they basically, immediately deploy. If you just eat them, they get pretty much 100% destroyed. Now, cannabinoids, if you just eat a regular cannabinoid extract like a fat-soluble CBD, full spectrum CBD is more absorbed than CBD isolate, but either way, that fat-soluble form, 90% of it gets destroyed before it can be made water soluble in the gut and then into the bloodstream and that takes about 30 minutes for it to get into the blood. So with a regular CBD extract, it's 30 minutes before you really feel anything, but if you eat 20 milligrams, you're actually only absorbing 2. The rest get destroyed and you pee them out. But you're paying for 100% and the terpenes don't get really absorbed at all.

And so what we've discovered is that because our formulation gets in immediately and it's way more bioavailable so you get, I mean, your body can use way more of the cannabinoids efficiently, but additionally you can time it so that when you smell a particular terpene and you take the formula that the timing syncs up, they meet each other and now you can curate essentially strains or targeted deployment of the CBD and other cannabinoids to the receptors in the body that you want and no other formulation can do that. So that's, I got excited. That's a discovery we made a couple of years ago and we're getting some really cool responses with that.

Katie: Yeah. I'd love for you to explain that a little bit more because when I first met you, I had a chance to try this and you did something, I think, called a loading dose of, like, it was basically getting up to a certain amount that the body kind of gauges, and I was shocked because I will admit I was skeptical and I was like, "Oh, I'm probably not gonna notice an effect, I've taken some of it before and there was no effect." And I totally felt the difference, like, a few seconds later. So explain what the difference is, what are you guys doing differently that causes that and then can you explain to people what that process that you did with me was?

Will: Yeah, totally. So basically, so loading dose is common with a lot of different compounds. You need to take more to really get the system moving. It's kind of like priming a pump. And if you don't get the right amount in, it's not gonna turn over and engage the engine. So essentially, we've been idling artificially our endocannabinoid system engine through this prohibition where we artificially cut it out of the diet in the '40s. And because our body has coevolved with producing cannabinoids internally to feed the system but has for



thousands of years relied on this external source just like we talked about with B12, the amount of receptors, of cannabinoid receptors, it's called upregulation, so our bodies put out way more of these cannabinoid receptors hoping to catch and basically competing with itself and the different systems to try and grab the cannabinoids when they can.

And so we've got, the key with a loading dose is getting enough in so that all the receptors that are upregulated get targeted and primed, at which point the system kicks into gear and then it downregulates the receptor sites. So there's actually, you lower the amount needed. So with THC, it's the opposite where...most people actually need a loading dose at the beginning with THC. But you build a tolerance with THC, whereas with CBD and I'm talking, anytime I say "CBD," I mean full spectrum, not CBD isolate. It's similar with isolate but there's actually, dosage is harder and it's less effective on multiple fronts.

But high CBD, full spectrum, you actually have an inverse tolerance on average over time. So you need less and less to get the same results. And the issue is most people need around, as modern humans, if they're not having a dietary intake with cannabinoids, at least 500 milligrams of a fat-soluble CBD to properly load the system and really get their endocannabinoid system working, and that's a minimum. Most people typically need a little bit more, up to, like, 1,500 on average. But essentially, 500 milligrams of fat-based CBD would retail somewhat around \$300 and the concentrations of the bottles are typically, if it's not an isolate, and then people are cranking up the content of CBD through adding isolate to it, but around 500 milligrams is typically around a very strong dose bottle. So you'd have to drink the entire bottle to even get a chance of engaging the system and most of the time, you need more than that.

So most people who have tried CBD, they did not get an adequate dose to properly engage their system and as a result, didn't feel much. But what it would target without fully engaging the system and getting it online is the CBD will still go in and target these receptors called vanilloid or capsaicin receptors and that helps modulate pain. They may get a little bit of benefit from anxiety. In all likelihood, that's, at best, a little bit of pain modulation and anxiety help and at worst, they're getting placebo. Now, placebo is great. I mean, if it's working, that's awesome but it does not get a properly optimized endocannabinoid system which truly does make a tremendous difference in your entire life and experience where you actually, you will feel it notably without placebo.

So what we figured out is we figured out how to encapsulate the oil in these little bubbles of water doing essentially what our bodies naturally do with a fat-based CBD, but we do it outside of the body using only certified organic plants and don't have any loss like the body does. So if you take one bottle of our 250-milligram full spectrum with the technology and the water solubility, it's, you'd have to eat at least 20,000 milligrams or 5,000 milligrams, our data is showing over 100x but essentially at least 5,000 milligrams of a fat-based CBD when you're only taking 250. So from 20x and now, new data is coming in and verifying that it's actually probably closer to over 100 times more bioavailable milligram for milligram.

So you can actually get an effective loading dose, one dropper or two droppers is enough to hit that equivalent of 500 fat-based CBD or more in a single dose cost-effectively which will then engage the system.

And so the reason why water encapsulation is important is because we've got this water layer covering our mouth and our stomach and our gut and it serves as, like, the gatekeeper to the body. Because once a fat-soluble compound gets into the bloodstream, it can travel anywhere it wants to in the body. So we've evolved with this gatekeeper that naturally blocks fat-based compounds from getting into the bloodstream, and so it has to sit in the gut and then the liver comes in and essentially our bodies process it and determine what is synthetic or poison or not, you know, recognized and it will try and pull that out through the liver in detoxification processing. And once it's scanned it, then the body produces the bile from, and that bile injection essentially nanoencapsulates the oil for any type of...into these nanobubbles of water at which it can then pass through the water and the gatekeeper, once it's out of the water bubbles, and go about their business.

And so we do that process using certified organic plants that break down into amino acids once it's made it into the bloodstream which is immediate. So when you take this formulation, the body recognizes that it's water, absorbs it immediately and then it diffuses out of the water bubbles, the body diffuses that. The water bubbles in that plant breaks it down to energy source and the cannabinoids go about and effectively target and there's not the same loss. Whereas, when you eat a fat-based and it's in the gut, by the time it gets encapsulated, like I said earlier, 90% of them had been destroyed by the stomach acid and the liver enzymes. So it's a very inefficient system, that's why it takes about 30 minutes for someone to feel it. And with our process, because it gets in immediately, you will notice the endocannabinoid system engaging typically under 30 seconds, which I believe is what you were saying was you experience, you felt it...and actually felt it.

And so we're able to deliver an effective dose range at a very cost-effective manner and have the results be felt within 30 seconds, not 30 minutes and not after, typically with the fat-based people who have to take it for weeks and weeks to eventually kind of build enough up in the system to get that engagement and that's not common.

Katie: Yeah. That was definitely my experience, was within, I would say, probably like, closer to like 15 or 20 seconds, somewhere in that range, although I wasn't counting. I definitely, like, felt it. It's hard to describe but I felt it hit my brain and also kind of like where it traveled throughout my body and I felt this, like, cool/warm feeling and it was very instantaneous.

Will: Yes. Yep. So that it basically, it gets in the second that it touches and because of the bioavailability, it's enough to engage it in that system. When the endocannabinoid system turns online, it is kind of like, people describe it as, like, a buzzy, kind of tingling warmth, electric feeling, almost. And essentially, we're turning back on a system that all of our ancestors had online through their natural dietary intake of cannabinoids and it's the way we're designed to feel, and it feels really good, you feel focused. Most people describe feeling, like, more grounded, more present, and just kind of like a light bulb turned on that we didn't realize we were missing and that clarity that kind of comes about and then you wake up and you feel good in the morning, we're meant to feel good. We've just artificially depleted the system designed to keep all of our other systems healthy and operating. And so that kind of sluggish bad feeling in the morning that a lot of people feel and the pain and anxiety and sleep issues that they are, not always, but in many cases and actually, a nutrient deficiency, an endocannabinoid nutrient deficiency. And so once you get it back up online, you feel awesome.

And then another thing that's unique, I think, is that the dosage needs will actually change on a daily basis depending on the oxidative stress load for that day. So if you're, like, sleeping well now and you're getting adequate other nutrient supply, and exercising, and things are just cruisy, you're gonna see a downtrend of need of dosage over time. But if all of a sudden, then you have, like, a stressful day and then you got to fly somewhere, your optimal dosage range is gonna move back up again. And the issue with fat-based, so there's actually what's called, which is common with a lot of bioactive compounds, is a bell curve of efficacy meaning that more is actually less effective than slightly less. So more is not always greater, it's not if...and there's actually multiple bell curves of efficacy. No one really has cracked the code on why that is, but essentially there's these optimal ratios. And you can go up, and these bell curves are shifting left and right on the dosage vertical or axis horizontally every single day depending on oxidative stress.

And so the issue is figuring out what, like a lot of questions people ask is like, "How do I know how much to take?" And with a fat-based CBD, the issue is you're shooting in the dark. We don't have a mechanism developed yet to say that that 10 milligrams that worked yesterday, you may need only 5 milligrams, and again, 10 and 5, I mean, in terms of actual effect in the body, that's way too low to get, to engage the system. But let's say you've been taking it for months and you can start to get some response in that range, 10 may have been the sweet spot but now you need 5 that next day, but you'll have no idea that that's what you need other than you won't feel it work as much. And so what we discovered, because ours gets in immediately, it will actually modulate the CBD receptors of the tongue and it will change flavor from bitter when we're in the valley of the bell curves, so less effective and it'll get sweeter and sweeter and sweeter and it will turn to very, very sweet like honey. And that's at the peak of one of the efficacy curves, and if you keep going, it will go back to more and more bitter. As you go down, the efficaciousness and then enter another valley, and then you keep taking it and it will get sweeter and sweeter and sweeter again.

And so each, you can literally trace out the efficaciousness of what you're taking on a daily basis and pinpoint those bell curve peaks every single time and not be shooting in the dark and never miss a dose. And so each curve, the higher you go up in terms of sweet spots, the more systems that the body can actually pull into balance. And so the endocannabinoid system operates in what's called triage effect and so it essentially is looking at which system is most out of balance. And then deploying the cannabinoids to that system that it determines is most out of balance. So you could have, like let's say you've got...you're feeling anxious all of a sudden and you think that's your number one issue. You take it and it turns to sweet and then it feels kind of better but it's not 100% better. What that means is that anxiety didn't make the cut or it didn't really make it high up on the priority order and it could have been focusing that your gut needed to have cannabinoids more than your nervous system.

And so what we found is if the first sweet spot and what you think is the number one thing going on doesn't make the cut, if you redose, then it will go back to bitter and then go back to sweet again, the second sweet spot, almost 100% of the time, what we think was number one does make the cut. And so you can keep going higher and higher on sweet spots to just maintain more and more systemic, basically deploy more to keep more systems at optimal levels and you cannot take too much which is...and there's a point where all that your body would do is just flush it out. But there's no need to do that and you'd have to take, like, half a bottle

to a bottle, at which point you've probably hit all of your systems. But there's no, what's called the LD50 which means 50% of the test population died from, it was a lethal dose, the LD50 for CBD is substantially higher than water's LD50. So essentially, you would have to drown from the water content in the plant before you would get sick from the CBD which is pretty fascinating. It's essentially safer than water.

Katie: If you're talking about like you guys with the water-soluble version, what I would guess with like a liposome or anything that's got fat and that you could eventually hit that ratio faster based on the other ingredients, right, in any particular formulation?

Will: You mean hit the, like the...?

Katie: LD50 or whatever, like it could potentially...

Will: No. Because, well, our formulation makes it way more potent so in reality, you would get there faster than a liposome or a fat-based CBD, but it's, like we're talking, you'd have to be drinking, you would have to drown from the water content in the plant before you would get any type of toxicity reaction in the body. So you could drink gallons and gallons and gallons and gallons of it and at which point, the water present would get you sicker than the CBD would.

Katie: Got it. And to that note, I mean, that makes it really essentially safe for almost any age or any person, right, because if it can't essentially be overdosed on, is it pretty much safe for anyone?

Will: Yeah. All evidence in historical usage, right, so, you know, basically, like as it was the most commonly used vegetable throughout our history on every continent minus...haven't found evidence of Inuit culture having it before Western intervention or colonization, because the Vikings...so there's actually, cannabis was present in North America prior to European colonization probably from the Vikings as well as the Chinese explorers. But basically, every other continent, again, Australia, interestingly enough was, in all intents and purposes, founded predominantly for the purpose of cultivating hemp. Prior to that, the aboriginal population did not have, there's no evidence of it being there before, but every other continent minus Antarctica had it for thousands of years and in the food supply. So the mom would be eating it, the kids would be eating it through the eggs or the milk, interestingly enough, like in Nepal, for example, there's regions where, like, despite it being criminalized, it still grows completely wild including the U.S., although hemp's not legal for the most part within the guidelines of the Farm Bill, we can get into that later, but basically, there's regions where it grows completely wild and Nepal is one of those regions.

And so in Nepal, they eat yaks and they also eat the butter made from yaks and milk. And so I asked this, my Lyft driver, he was from Nepal and I said, "Hey, does cannabis grow wild?" He's like, "Oh, yeah, it's everywhere." And I said, "So you guys eat the yaks and you eat the milk, or whatever?" He's like, "Yeah, of course." And I said, "So do the yaks like to eat the hemp and the cannabis plants?" And he goes, "Oh, yeah, it's

one of their favorites." And it further demonstrates what we're finding. So they've had pretty much an uninterrupted supply and we're gonna run a study on that population to look at their cannabinoid levels. But that's, anyways, the children and mothers, because it's passed in the breast milk and actually, anandamide is in the breast milk, and through artificial prohibition, it's actually in less concentrations than what's really ideal to activate a child's endocannabinoid system. But the endocannabinoid system is one of the first systems that develops in utero, and then through breastfeeding and anandamide delivery, it actually activates the endocannabinoid system which is vital for development of all the other systems and starting proper hunger levels and all sorts of stuff.

And so essentially, when they were having cannabinoids, that also gets passed in the breast milk and so, in terms of logic and historical data, yes, and then it's, still it's better to err on the side of caution. We need to aggregate more data. But those most recent tests that were conducted was actually on higher THC, but Jamaican cannabis, all the landraces and all the, essentially, the nonhybridized forms of this plant had different ratios of THC to CBD, but predominantly it was high CBD, low THC and then some varieties at higher THC but they always had higher CBD, but this woman wanted to see what the effects of cannabis consumption was in utero and for children. And she realized she had to go to a population where it's socially and culturally acceptable. And in Jamaica, the women, not all women but it was accepted that they would drink cannabis tea during pregnancy as did Queen Victoria took cannabis during pregnancy, you know, well documented. But essentially she looked at the population of mothers who did not drink the cannabis tea versus the mothers who did, and what she found was that starting from birth, the cognitive development and other health factors that the kids whose moms used cannabis tea were vastly more advanced in cognition and other body factors than those who did not, for the moms who do not.

And she studied the population for nine years until she called it, she ended the study because she was looking at it for nine years and for the entire course of that, the children remained developmentally superior to the kids whose parents did not have, or their mom did not have an intake of cannabinoids. And yes, and so if you're a vertebrate and you're a modern human, you really do need cannabinoids. I think it depends. But we recommend obviously, anytime you take something, you should talk with a practitioner or get advice, especially if kids don't have a notable endocannabinoid deficiency issue or other issue, to obviously talk with your pediatrician or make your choice but...of when to... As children, we have healthier cannabinoid systems. As oxidization exposure increases, then that's when we start to get more and more deficiency as we age. But for historical use, all kids were having a regular intake of high levels of CBD for thousands of years without issue.

One caveat would be, we need more data on, too, is if you're taking medication that says, "Don't take with grapefruit," there's limited data showing that it can act like grapefruit but also another study showed that it did the opposite effect in these digestive enzymes which is much more in line with how cannabinoids work in the body or CBD in particular. THC is more like a scalpel, it's kind of single directional whereas CBD is much more, it's an adaptogen and so if you've got an overactive immune system, it will help modulate and bring it into balance or if you have an underacting immune system, it will modulate and bring it up into balance, and so in all likelihood, it's doing the same with digestive enzymes. That being said, it's better to err on the side of caution. And if you're taking medication that says, "Don't take with grapefruit," talk to your doctor first in what levels you are because CBD can potentially act like grapefruit. That's the only caveat.

Also, actually, for people with diabetes, they'll find that a healthy endocannabinoid system regulates healthy insulin levels and it will rapidly, with the right, you know, the proper dosage will rapidly balance the blood sugar out and so you need to monitor your blood sugar and not give yourself a bunch of insulin that you were...the same levels of insulin you were getting before taking it because you'll need less and less pretty quickly.

Katie: That opens up an interesting question about CBD and the potential for anti-aging because I know right now there's a lot of popularity of using, for instance, metformin, which is an insulin, really, and diabetes drug, as an anti-aging compound because of the ways that it can reduce the damage of too much insulin and too much sugar in the body. So I'm curious if it has that effect that, probably you guys haven't studied this directly but do you think there's potentially an anti-aging component for CBD?

Will: A hundred percent there is, yeah. So number one, age, so the way that we age is telomeres, right, shortening and these telomeres are, at a cellular level, they instruct the cells how to recode and rebuild and so as oxidation hits them, they get damaged. As they get shorter, the copies of the cells get more and more blurry, so to speak, and that is why we'd look like, that's how we age. So we know for a fact that cannabinoids are extremely potent antioxidants and much more. And so they'll buffer the oxidative response from even hitting the cells, thus protecting the telomeres that way. And there's limited, but we're confident in finding that it will replicate the data showing that it can actually lengthen your telomeres and thus literally is anti-aging at a cellular level, but 100% in terms of...well, which has been very, very well studied and documented is that a healthy endocannabinoid system leads to neurogenesis in the brain, meaning it will actually help regrow brain cells. So our company, we have a biotech division talking about it in terms of the biotech side because of FDA stuff. But we've got data and patents on actually regrowing myelin sheathing of nerves and actually regenerating damaged nerves and regrowing them.

Having a healthy endocannabinoid system is the most effective policy to have a healthy optimized body as long as you, obviously, you got to put in other inputs like healthy nutrients and exercise, but it actually increases your ability to recover in exercise through reducing inflammation levels and you've got cannabinoid receptors in your fascia and it actually helps your muscles repair faster so you can build muscle mass quicker. So we work with different professional athletes and then also cognitive youth, it increases neuroplasticity. We're actually gonna be working with the Flow Genome Project, we're in talks with them right now. But it's that biochemically flow state or being in the zone where you're just cranking and everything is operating properly.

It actually turns out that it's a peak of anandamide in the brain with the right levels of dopamine and serotonin, and so because CBD naturally increases anandamide levels in the endocannabinoid system regulates and has receptors in every system, cell or neuron, or cellular tissue in the brain, we're finding that it can biochemically get you into flow state and maintain it longer. We're gonna study that with them. So, yes, it's the best health optimization you can possibly do for yourself is to have a healthy endocannabinoid system

and the key is getting enough in at the right dosage levels to be able to maintain that in this modern environment, and to really optimize, you need a minimum of 500 milligrams a day to start.

Katie: Yeah. And that makes sense with the anti-aging component even just in light of what you said about oxidative stress because I think, like, our modern lifestyle is kind of built for oxidative stress between, like, the things you think of that can increase it which, like, smoking and drinking too much and fried food, which hopefully nobody is doing, but also just flying or eating out or not getting enough sleep or even heavy workouts, like all of these things contribute to oxidative stress. So to have a tool in the toolkit to help battle that is huge.

This episode is sponsored by Fabletics. So here's the deal- if you're anything like me and workout pretty much 5-6 days a week and sauna daily, you go through an incessant amount of gym clothes everyday, which means more loads of dirty laundry. I find myself always buying more gym wear to avoid this issue but I also won't shell out hundreds of dollars for the really pricy gym wear (I'm not going to name names) and was tired of cheap gym wear that wears out quickly with lots of washing. My solution to this predicament is a brand call Fabletics. If you haven't heard of them- you're missing out! Fabletics is a fashion focused activewear brand founded by Kate Hudson and its mission is to empower women by making a healthy, active lifestyle accessible to everyone because of its exceptional price point. No matter if you're ready to zen out in hot yoga, crush it in a crossfit class or simply take a stroll in the park, Fabletics has you covered and they carry gym wear suitable for any type of workout. Fabletics IS your one-stop shop for affordable gym wear and ALL of their designs are created in-house. Plus, they are cute enough that I find myself wearing them everywhere, not just to workout. I'll just throw on one of their pullover tops for a cute outfit. Before I forget, Fabletics is offering an incredible deal you don't want to miss. You can get 2 leggings for only \$24 (\$99 value) when you sign up for a VIP. Just go to [fabletics.com/wellnessmama](https://fabletics.com/wellnessmama) to take advantage of this deal now. Also free shipping on orders over \$49. International shipping is available and there is absolutely no commitment when you purchase your first order.

This episode is brought to you by Genexa, the first ever organic and non-GMO medicines that use patented technology to create formulas that work, without the dyes, the artificial sweeteners or harsh preservatives that are found in some medicines. Founded by two dads on a mission to find better products for their own kids, I love the commitment to quality Genexa has and I love how well their products work. One of my favorites is their homeopathic arnica tablets. I recently got back into power lifting and running and the first few weeks... ok first few months... were a little rough. The Arnica Advantage and the pain crush topical cream were a lifesaver for me. To shop their full line of organic and non-GMO medicines, go to [Genexa.com/wellnessmama](https://Genexa.com/wellnessmama) and use code WELLNESS for 20% off your order!

Katie: And the other thing I think that's really fascinating with this to go back to it for a minute is the terpene thing because that was something I had never heard about even in a lot of research with CBD. And something I've been playing with ever since you showed me, basically you had me smell plants essentially while I was taking the CBD and I noticed the response.

So now I've been doing that in my own life with, like, lavender at night and peppermint in the morning whereas I used to only take CBD at night because it would put me to sleep. Can you explain kind of on a practical level, like, how to get that terpene interaction correctly?

Will: Yeah. So basically, the only way for them to time each other properly, to meet up is to get, is to inhale them like an essential oil or a plant or like an orange for the limonin. You smell that and you're actually pulling these compounds up into crossing blood-brain barrier, that's the really, only effective way to get it into the system other than through, like, through the lungs. And then you take...so only our technology enables you to actually have the timing be right so that they can interact and meet each other because ours gets in immediately. The terpenes deploy immediately essentially in the body. So if you take, titrate your dosage of our formula to where you get a sweet spot and an optimal ratio but it will turn to very sweet, like honey, flavor and then smell those essential oils or citrus fruit, they'll time up perfectly and you can custom-curate where the cannabinoids are gonna go in the body and essentially the mood for what you want.

So like you said, like a peppermint oil, the terpenes in that are stimulating. Pinene in, like, pine trees also is very much stimulating for the brain and focus. So you smell that and then that's what your experience will be. But if you can literally, on the spot, you can redose and then smell, like thyme, for instance, has myrcene in it as do mangoes, myrcene is very sedative. Lavender is relaxing. And if you smell that and after you just smell the peppermint, you'll feel much more alert, then you redose to the next sweet spot, smell the thyme, you'll notice a completely gear shift and you'll be much more sedated and relaxed, and so you can literally custom-curate using essential oils or terpenes to have the effect you want the cannabinoids to do in the body.

Now that being said, you're not gonna guide them, the body's endocannabinoid system has its triage list and it knows way better than we do, but you can, still, there's times where let's say your body is saying, "Look, you're running a million miles an hour and we need you to sleep and repair so we're gonna..." The endocannabinoid system is gonna naturally sedate you and, like, how you experience how you're tired, right? You can bypass it gently by then saying, "You know what, that's great, but I can't sleep right now, I got to work." And you smell the peppermint and you'll shift it so that you can basically gently nudge it out of its triage list and pop, have what you want get targeted first in line. But you're not gonna do it in a way that could be damaging, like it won't allow it to, like, throw anything up because it's totally nontoxic.

The cannabinoids don't go out of the fat layer until about 15 minutes. It's faster and more bioavailable. It's about 8x. Our delivery is just a single layer of water and we're showing over, well over 20 that is showing over 100x, it's way more bioavailable but it also has an immediate onset whereas a liposome, it's better than a fat-based, it's about eight times more potent, but it doesn't diffuse into the system for about 15 to 20 minutes, sometimes 10 depending on how they do the liposome. But the timing won't work, you'd have to take it, know when it kicks in and then run and then smell it, essentially. And with a fat-based, it's 30 minutes and you have to smell it right when you kind of feel it inside. So no other system is really effective at being able to curate these different outcomes. Now if you have a vape pen, you can, that's where terpenes will work, but you'd have to use different strains or smell it. It's less bioavailable than our formula, but that's the only other way to do it.



Katie: That makes sense. And I've said for years that in most cases, I think the only way to really get the benefits when you use essential oils is by diffusing them, using them aromatherapy-wise because it's easy to ignore but we really, that is how they impact the body in a very effective way. They're also safer that way than, for instance, if you're drinking them.

Will:

Katie: So I love that this kind of dovetails perfectly with that.

Will: Yes.

Katie: So you mentioned the Farm Bill and I know that the hemp issue has been a semi-controversial one right now in the U.S. I'm curious, being both in the industry and then, I'm sure, the research you're doing on this all the time, what do you see as the future of hemp in the U.S.?

Will: Yeah. So I think we're just kind of scratching the surface of...so we've been talking really about, like, cannabinoids and terpenes and optimizing health in the internal environment. What's fascinating about this plant and the reason why it's been one of the most used vegetables and plants throughout millennia is that it also has a plethora of other uses. So the term "canvas" comes from cannabis. That's, and then World War II right after they put prohibition in place, they all of a sudden realized that they needed hemp for nautical rope and industrial usage and so they created this temporary hemp for victory gardens. If you go and look up "Hemp for Victory," you'll find some awesome old propaganda on how it's...the most patriotic thing you can do is grow hemp. It's literally right after they made it illegal and one of...the real reason that cannabis was made illegal was not for the high THC varieties. That was what was pushed but in reality, it was...people have been making hemp paper for thousands of years, but actually, the first draft of the U.S. Constitution was written on hemp, the first flag was made out of hemp.

But because it's so strong and why it's so effective for fiber, it's naturally antimicrobial and antifungal so it makes it the most effective rope. For nautical use, it doesn't rot in water and that's due to the cannabinoids and terpenes in it. But it's extremely strong, so it is very hard to process efficiently. Actually, Thomas Jefferson said the most patriotic thing you could do for the country is to sell hemp and him and Washington grew it and they talked about the indica varieties. Now, the indica varieties would have been high THC because that particular region had higher THC producing cultivars, so they definitely were using both and growing both. And it's well documented in "The Pharmacopeia," as well.

But essentially, Jefferson, when he was at the U.S. Patent, as a patent officer, he discovered a way to make hemp decortication or separating the outer hard part or the inner rope parts using a horse thrasher essentially

and then he said that he decided to open source that patent because he thought it was so important for the country. So at that point, hemp or paper pulp from trees was more effective and efficient than hemp pulp because it was so hard. In 1936, the U.S. Department of Agriculture figured out how to make an efficient decorticator that made hemp product-, or hemp paper production equally as efficient to wood pulp paper production. Now, one acre of hemp produces the equivalent of four acres of old growth forest worth of paper and it grows in 40 days. It also protects the soil and it's got a plethora of other uses, and so it completely annihilated the lumber industry for paper.

And William Randolph Hearst owned pretty much all of the lumber industry in the States and also owned all the newspapers which were printed on the paper, and then at the same time, the DuPont family came up with synthetic rope. Now the decortication hemp rope, because of its antimicrobial and its strength properties, could have competed with rayon essentially, so they formed together... There was growing racial tensions in the country because cannabis was in South America and North America prior to European colonization, but basically, people from Mexico had a long tradition of smoking higher THC varieties as well as high CBD varieties in teas, it's well documented. And then also African-Americans and musicians were using higher THC, it was actually socially acceptable, completely socially acceptable to use high THC as well as other varieties that there's an old high THC candy that was used in actually, in the Civil War, both generals talked about how they, every soldier should have it and every house should have it, it's the best thing. It's safe and it helps your health.

But essentially they targeted on these racial tensions, created an issue of THC, used that as the demonizing factor and rapidly passed legislation with Anslinger to make it illegal. And it was really the best PR campaign that's ever been run because they took something that was ubiquitously consumed and was the lifeblood of the economy and metformin essentially is in millennia in reality, and made it illegal overnight through controlling of all the... Since he owned all the newspapers, they were able to run the campaign, use fear, and essentially artificially deplete the population of cannabinoids and all the other industrial usages.

So to fast-forward, now we've got, thankfully, that was a very minor blip in human's history, right? For thousands of years, it's been a continuous supply. We artificially cut it out in the '40s, but just under a century now, we've got it coming back in, the rest of the world was able to continue to grow it. Some hemp was very much designed for fibers, so that's what it looks like, you know, the tall, skinny, high fibrous varieties, but legally, hemp is a legal definition so now we've got hemp cultivars that are very resinous and high CBD and cannabinoid in quality producers of terpenes that are legally hemp because the THC is below 0.3 but it wasn't until 2014 that the U.S. definition of hemp included the flowers again, initially. Prior to that, the exemption for hemp was fiber, so the stalks, the stems, not the leaves, not the flowers, those were exempted in the legislation because we still relied on them for industrial use but we could not grow it in the U.S. It had to be imported and the CBD had to be extracted from the stalks and stems. Now with purification technologies using a lot more, this was inefficient at achieving it and caused it to be way more expensive.

But then in 2014, the Farm Bill passes that redefines hemp as any cannabis plant whose THC is below 0.3 on a dry weight basis including the flowers and the resins and essentially redefined it, opened it up for U.S. production and for flower sourcing which made it way more efficient and the development of much different

types of varieties and cultivars. But, it put it in the guardrails of it has to be linked through the Farm Bill language which stipulates that it has to be grown in the state where it's legal to grow hemp, and then simultaneously, it has to be linked with an institute of higher learning. So that's happened throughout the U.S. since 2014. You could take the same plant, grow it in your backyard. That would be a Schedule I plant. You take it and grow it under the Farm Bill guidelines and guardrails. The first line of the Farm Bill clause states, "Notwithstanding of the Controlled Substances Act," meaning that it is exempt from and completely not defined by the CSA and the same exact plant goes from Schedule I to not scheduled at all.

Now with the new Farm Bill, there's thankfully much better legislation that's opening it up and saying that it's completely, no matter where it's grown, it's not a controlled plant, you don't have to be in the confines of an institute of higher learning, being registered with them, and the USDA is gonna run it now. It's got caught up in other stuff completely non-related to hemp in the current Farm Bill. But that clause will not go away and once it passes, it's gonna further open it up and kind of open up the floodgates for distribution and innovation. But that's on the CBD side but then on the innovative side, we also figured out how to scale and manufacture supercapacitor batteries out of hemp stock. We're partnered with Lawrence Berkeley Labs in accelerating that technology where we can essentially power computers or grids or you name it using a capacitor, essentially graphene, out of the hemp waste. That's gonna be really game changing and that's just one of the...

You can also make concrete out of it, concrete replacement called hempcrete that is bulletproof, fireproof, antimicrobial, carbon sequestering, so you can make carbon negative buildings to sink CO2 all out of the different part of the plant and waste product, "waste," and simultaneously it builds topsoil and quality of soil doesn't...the packed soil breaks up compacted soil, so it literally catalyzes benefits and so many different industries from papers to plastics make... Actually Audi is making plastics using hemp plastic in some of their cars. Henry Ford actually made a Model T that was made out of hemp-PLA blend and the diesel engine can run off hemp seed biodiesel or biofuel. It was designed to...he was using hemp seeds as the fuel when he designed it.

And the plastics are six times stronger than steel, so we're about to see a major evolution of the industry. Actually, kind of going back to the roots a little bit but now applying modern technology to innovate it. And if you look at the course of every iteration of, a kind of epoch of our evolution going from hunter-gatherer to agricultural, there is a major oxidative stress uptick from that event, but people are using cannabis, it was the first plant. One of the first, it's not the first plant. It's domesticated. We were consuming it. We got an adequate uptake and an increase of cannabinoid consumption and we were able to handle the oxidative stress increase that came with that change.

Now, you go to the industrial era, cannabinoids were commonplace and in the diet, people are using them. We had more oxidative stress exposure from that era, from, you know, disease and pollutants or whatever but the cannabinoid intake was steady in whatever increased as it got more documented and studied, which did, so it was there but then it also led to the, you know, not just from a physical level but it led to the advancements of the next stage, so from nautical exploration to industrial, and there is actually evidence showing that from hunter-gatherer to agricultural, it was the discovery of nets and the technology of nets to be able to fish in one spot that led to an agricultural society, hemp fiber rope was in that region and probably

it was hemp but we can't prove it yet. But anyways, every single advancement, hemp has been one of the primary, or cannabis which is hemp, has been one of the primary drivers and catalysts of innovation and advancement while simultaneously providing the nutrients to handle the subsequent oxidation bump. And so now in the age of technology, we artificially depleted ourselves and if you look at the correlations of the different issues and then you line them up, they're pretty astonishing and then seeing how rapidly they can be reversed, we're talking in certain issues, within weeks, which is indicative of a nutrient deficiency. Just like scurvy takes two weeks to reverse it, we're seeing...

Actually, Stanford University came out with a study saying that they believe endocannabinoid deficiency leads to nerve degenerations such as Alzheimer's and Salk verified it that trace amounts of THC strip the beta-amyloid plaque out of the brain and then high CBD increases neurogenesis. I've personally witnessed someone who couldn't talk for three years with Alzheimer's talk in two weeks at 85% capacity and stabilized ever since which, again, is indicative of a nutrient deficiency. But with those advancements now in the age of technology, we can reintroduce and get healthy endocannabinoid systems. And by increasing flow state, it enables us to access our unconscious genius in a way that our operating capacity and intelligence can rapidly, exponentially increase in flow. And we can actually handle these new advancements of all this information overloads that it causes oxidation.

We increase our cannabinoid intake, get the system back up online and I believe we can emerge into, completely transition from a petroleum-based dependency. Now at this next iteration, hemp can truly get us off of petroleum and into regenerative symbiotic design as well as when you have a healthy endocannabinoid system, you're much more likely to... It literally increases neurogenesis in the prefrontal cortex and the corpus callosum which bridges the left and right hemisphere of the brain and then it activates the parasympathetic nervous system which causes us to leave our kind of four F response, and when we're in the amygdala and the four F, we see things as "other" and "scarcity," so there's an actual biological neurochemistry in regions of the brain that cause us to see things as threats and others, which with endocannabinoid deficiency, kind of artificially keeps us there for the most part. When you get it back online, the parasympathetic engages and the increase of neurogenesis in the prefrontal which enables us to see things as interconnected and working together in symbiosis as opposed to kind of the parasitic relationship.

And so from the biological and environmental iterations to the neurological and biochemical environment, the pattern holds true where it promotes synergy and symbiosis and we're literally seeing with this legislation, you had Mitch McConnell and Chuck Schumer giggling and coming together to legalize hemp and it's bridged the left and the right and it holds true at a biological level as well, so it's really exciting. I think we're just scratching the surface. There's so much to learn and it's only going to further propel us into a better society for everyone and that's our vision and mission and ethos.

Katie: I love that and I share your hope certainly and I hope that we can continue to move away from things like plastics and petroleum-based chemicals so much. And I know that you guys are offering a special deal just for the listeners of this podcast and that will be in the show notes at [wellnessmama.fm](http://wellnessmama.fm), so people, you guys can find the link and find the discount which you can make sure you take advantage of. I know I order it at this point pretty much by the case because there's so many people in our family. But just to remind us on a

practical level as we end, basically someone would get this and then take it until it tastes sweet, right? That's kind of how you know it's the right dose for your body?

Will: Yes. So you want to titrate the dosage and we have dosage instructions, I'll send that to you so you can share as well, but it breaks it down. But if you take, like, a quarter dropper at a time, it will get sweeter and sweeter and you'd put a quarter dropper in, wait five seconds and then put another quarter dropper in and it will get sweeter and sweeter and keep repeating until it's almost 100% sweet like honey, and then just do drops, not quarter droppers but just drops at a time and it will turn to very, very sweet. Now if you keep going and all of a sudden, it starts going bitter again, that's okay, you just missed the first bell curve and you just retitrate and you want to stop ideally when it tastes zero bitter. But if it's like almost 100% sweet, you're close enough to the peak of the efficaciousness to get what you need.

Katie: Awesome. And, again, those links will be in the show notes. For any of you guys who are driving or running, don't worry about writing it down, just check those out at [wellnessmama.fm](http://wellnessmama.fm), make sure you grab the discount. But, Will, thank you so much for your time. This has been like a history lesson and a science lesson and a story all mixed together and I've thoroughly enjoyed it and I know the listeners have, too. So thank you for educating us.

Will: Thank you so much for having me.

Katie: And, of course, thanks to all of you for listening, for sharing your most valuable asset in your time with me today and I hope that you'll join me again on the next episode of "The Wellness Mama Podcast."

If you're enjoying these interviews, would you please take two minutes to leave a rating or review on iTunes for me? Doing this helps more people to find the podcast, which means even more moms and families could benefit from the information. I really appreciate your time, and thanks as always for listening.