

Get Your Mojo On With All Things Keto – Dorian Greenow with Dave Asprey – #824

Announcer:

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Dave Asprey:

You're listening to Bulletproof radio with Dave Asprey. Today we've got our live studio audience from the Upgrade Collective, my membership and mentorship group. Go to our Upgrade Collective to sign up and spend time with hundreds of people learning all of my books in community, weekly calls, coaching sessions with me, all the cool stuff if you want to really be in control of your own biology and get to tune in and see what happens on the podcast before we edit it; how many times do I really drop an F-bomb, actually not that many and we probably wouldn't edit it out if I did. But anyway, it's a lot of fun and the studio audience gives me questions during the interview. So what I'm asking is actually what they want to hear and hopefully what you want to hear.

And what do you want to hear about? You want to hear about ketosis, ketones, glucose, monitoring your ketones, and what happens when you want to go into ketosis, what happens when you want to go out of it. So I've got a guest for you today who is definitely geeky, who has gone really, really deep on this to the point that they call him. Mr. Mojo, also known as Dorian Greenow, and he's the founder of Keto-Mojo. And he talks about how he went into ketosis, lots of scientific details.

So if you're into the keto diet or the keto phase of the Mojo diet, which is clean cyclical keto, not just keto, we're going to go deep on that stuff. And also, how do you know if it's working? How do you know if you had too many carbs, too much protein, et cetera, et cetera, et cetera? You'll learn all that on this upset. Dorian, welcome.

Dorian Greenow:

Oh, thank you so much for having me. It is great to be here and to be sharing some time with you.

Dave:

We first met in 2017 at the biohacking conference when you debut the meter and you actually launched the Keto-Mojo meter back then, how's been doing since then?

Dorian Greenow:

Yeah, I think it's been an absolute whirlwind. I mean, if you remember Jim and I, we just lost our house in the fires of 2017 and you were my first conference. I remember getting down there and all the biohacking stuff was there and it was like, "Great. Just give me an IV drip. Let's get going. Thank you very much. Let's put up." Hadn't had sleep for 36 hours and-

Dave:

You're pretty tweaked.

Dorian Greenow:

... and basically, I fueled on ketones and fasting. We went at it and it was a successful launch. And since that time, we're our third generation of meter. We're now in 26 countries, but is America and Europe. We just opened up a distribution in Chile, and were looking to open up more countries as we go along

because our goal is to lower the cost of testing. I believe that if we can lower the cost of testing to make it more affordable, we can affect greater amounts of change and outcomes.

And most people don't realize if you think back in 2017, ketone testing was like four or \$5 a strip and people were hunting on the back ends of Amazon to try and get cheapest strips. And we introduced it at a buck a strip then, which was a 75% reduction in cost.

Dave:

I spent at least \$2,500 on keto test strips when I was doing the Bulletproof Diet development and this was earlier on and I was just happy I could do anything with the blood versus just peeing on a strip. And if you're new to the show then what that keto test strips, you want to know what your ketone levels are. Are you actually burning fat to make energy? Well, ketones tell you that.

And an accurate assessment comes from the blood, but if it's five bucks and you want to do it before and after every meal like, "Oh, look, I made ketosis and I spend \$50 a day to prove it to myself." And you had to be like the millionaire keto guy or there wasn't a way to do it. So Dorian comes along and gets pissed off and says, "I'll cut the price by 75, 80%." And they launch it at the conference. So it's been moving ever since. What does it cost per strip now?

Dorian Greenow:

Well, we just launched our new GK+ meter back in October, and we dropped the price again by a further 20%. It's a new manufacturing platform. So now ketone tests are about 80 cents a strip. The goal was test three times a day for less than the cost of a latte, but you got to think about a meter as being a compass. And if you're going into new territory, you need a map and a compass.

But if you're following a similar route every day, do you need the map? Do you need the compass? So, yeah, there's an initial cost. And we find that there's this increase in testing for most people to begin with. But as they learn their way, the need to actually, for some people diminishes.

But we also have to take is what is the person's why; why are they doing it. Are they doing it for optimal longhouse? Are they doing it perhaps because they've got a cancer diagnosis or they have epilepsy or maybe a nutrient psychology, or maybe it's for a woman who's looking to conceive from polycystic ovarian syndrome?

So there are different types of keto. You mentioned about cyclical keto. You've got full ones, you've got three ones. You go low-glycemic keto. You have obviously targeted keto. But having it data-driven helps you refine it into the bio-individuality. And that to me is the key. I'm agnostic on whatever somebody is keto, and I'm not going to play the keto police saying, "That's not keto." The data should guide people. And once you have that, you get data-driven outcomes because the blood doesn't lie.

Dave:

One of the things that makes me happiest, so people, "You can't have carbs, they're not keto." I'm like, "Look, there's 40 grams of carbs in this inner fuel." This is a prebiotic fiber that, I mean, I talk about it fastest way. It makes butyric acid and it sure as heck isn't going to stop ketosis. And it usually accelerates ketosis and it's a carb. And the keto bros, "If it's a carb is bad." If it's science, you might want to pay attention it.

So seeing the data is kind of fun. It's like, "Oh, look, I can break the rules because the rules are actually poorly written to not catch the corner cases and the corner cases are where the hacks are." And without the data, if you have a CGM monitor and keto test meter, the Keto-Mojo, you're like, "Whoa, I actually know what my body's doing." And here's the question for you, can you feel the difference

between ketone levels of 0.8 and 1.8 cognitively or energetically? I mean, because you've mentored yourself thousands of times.

Dorian Greenow:

A little bit for me, I would say.

Dave:

You can? I never could get that level of granularity.

Dorian Greenow:

It's very, very tough. I mean, I was on antidepressants for many, many years and I found that when my ketone levels were between 1.1 and 1.7, that was my zone. But generally, my ketones are always lowest in the morning and then they rise up during the day.

But that for me, was a psychological piece and I was also being very careful at keeping a diary when I was first starting and it included mood as well to try and say, "Hey, what's going on here?" So at an early stage, I was making a correlation, but that's a real fine tuning of it after thousands and thousands of tests. I'm lucky that I can get strips really cheap.

Dave:

Yeah, you get the best deal on the planet. If it's above 0.5 for me, that's considered not quite nutritional ketosis, but that's a level where all the hunger hormones and things shift. I can feel that if under 0.5 now, but when you hit 0.5, it's like, "Yeah." You drop into a different gear in your car. All right, I've got this. But of that, I really don't feel difference between ketones of three and 0.5. So it's very nuanced and difficult for, I think most people because I'm relatively sensitive. I just, I'm not feeling it.

Dorian Greenow:

Yeah. That nuance is definitely the piece that needs to be learned, I mean, nuance even for athletes. What we measure is in the tank, we don't measure how good your mitochondria is at receiving ketones nor how good your liver is at creating them. So this is where the bio-individuality comes into play.

Imagine if you're an athlete and you were working at a certain wattage, a cyclists say, and you tested yourself before you went on your workout, you knew how many ketones you had there. You had this long endurance ride and say at the backend, you tested and you suddenly realize, "Wow, you had 1.7." Well, you basically have left something in the tank. You left something on the table.

So there is a potential for an athlete to increase their metabolic edge. There's the likes of Zach Bitter who did have the world record. It just recently got beaten. But Zach Bitter would be consistently trying to work his metabolic edge.

And I think that, I think is where the interesting piece can come on in and people are really trying to maybe buy a hack for endurance, and things like that, saying, "How much do I have left in the tank? And could I have increased my wattage? And let me go back at again." It's sort of like, "All right, let's see how we did." But that's also just a data point in many. Cortisol, sleep has a massive effect on somebody's GKI when you see your glucose go up because of cortisol.

Dave:

You have to define your terms for people. GKI, some listeners don't know.

Dorian Greenow:

Yeah. GKI is your glucose ketone index. So this is measuring your blood glucose and your blood ketones relatively around the same time. And it is the relationship between your glucose in millimoles, not milligrams per deciliter, which Americans measure in, divided by the ketone measurement. And this first came out from professor Thomas Seyfried of Boston College who is using it because he found that the GKI was very stable rather than glucose bouncing around a lot. It was a stable relationship number.

And that when he was looking to get therapeutic ketosis to starve out cancer cells, because Warburg said it's a metabolic disease. Now, there's still a lot of conversation and a lot of work that still needs to be done as to what can be done with cancer to starve it out. But the GKI was what he brought out and brought first. And I was lucky enough to meet him at Boston College in his chambers. I think that chambers that you use for a professor, or is it offices or rooms?

Dave:

I think that's the British, chambers. Here we call them [inaudible 00:10:41].

Dorian Greenow:

Yeah. But he had Hogwarts' hat on at the time.

Dave:

And it was a chamber for sure.

Dorian Greenow:

Yeah. And there was interesting, you see, when you go into a tenured professor's office and you see the life of... The Krebs cycle is surrounding him, and the guy can draw out the Krebs cycle from memory. And it was a real honor to learn from him and to understand more and be near him, and that's how we started out on the GKI. We're the first [inaudible 00:11:08] in the world that will actually do it on meter.

Dave:

It's really cool to be able to talk with the people who are doing that kind of research. It's one of the reasons I do the show. It's like, "Wow." You get to meet people who are coming up with better ways of looking at data in the body and all. I have some questions about ketones. So the first time I heard about ketosis was somewhere around '95, '96, and this is in the days of Atkins diet.

I think I had his book and it was basically, "Don't anything that's a carb." All sorts of garbage. But I got my pee strips, which are really hard to find back then, and you'd pee on a strip and it would turn pink and I would just work so hard. And sometimes you get a little bit pink and I had all kinds of metabolic problems and mold poisoning and low thyroid, and whatever else, but I was kind of discouraged by that.

And then, when I went through a raw vegan phase and Zone Diet, I tried all sorts of different stuff in this quest, "How do I lose that 100 pounds and keep it off?" Then I said, "Okay. I'm now coming back to my keto roots." But now I understand all this stuff about the type of fat and all these other things.

So I went and I bought more pee strips and it worked better. I think the strips were better because it had 10 years of additional science. And then I found out when I could get the meters, I really was able to dial in and then I've also tried breath meters.

Can you walk me through sort of what happens with pricking a finger? What happens with breath? What happens with pee? And also, when are we going to get a stick on keto monitor that just says 24/7, are you going to make that? So there you go. One question, give me the technology landscape for people who want to know what ketones are.

Dorian Greenow:

All right. So first of all, and we talked ketones, but there are three different types of ketones. You've got acetoacetate which can be detected sometimes in urine, that's a urinalysis strip. There is beta-hydroxybutyrate, which is measured in the blood. And there is acetone that can be detected in the breath, but they're not all created equal.

About 28% of the energy that is available in the body is in acetoacetate, and that can get spilled into your urine. And then, when you're using your analysis strip, you're basically detecting an amalgam of what might have potentially be spilled during this time, but it is affected by hydration.

You could be really hydrated therefore the blood is diluted therefore it won't really show a quantitative amount, it will show a subjective amount; light pink, dark pink or is it really, really dark red? Does that mean that I've got ketoacidosis because they were originally designed for type one diabetics to show very high amounts of ketones. So they're really more of an on, off switch with a bit of gray in the middle.

Dave:

That's why mine didn't work by the way back in the '90s, because it was zero to 50 and I needed zero to five basically.

Dorian Greenow:

Yeah. They still have changed, they still use a nitroprusside chemical reaction. And actually we do, Keto-Mojo, does have a urinalysis strip and we put it on Amazon and it's the cheapest strip that is out there. We don't make any profit, but we actually if you read the manual in the back there, we'll tell you why it doesn't work because we want people not to get ripped off by thinking that they're going to have a urinalysis strip and then they get stressed and frustrated. So buy it, and there'll be a coupon in there for whatever.

Then we come to breath. Now breath is acetone and that's sort of like an exhaust, if you will. It represents about 2% of the energy that is in the body. And the challenge with breath emitters is you cannot sluice them for trigger foods because most of the trigger foods will cause a false positive; things like alcohol, sugar alcohols, lozenges, gums, and those kinds of things, they can coke the sensor.

And the challenge with coking the senses is they use a heat cycle to burn that contaminant, which cokes it up some more until eventually it doesn't actually build you a good result because you can't replace any of the senses that is in that, except for the level, which is like a \$600 machine. I mean, the level was the one that came closest to it.

The other ones generally, they vary too much. So the gold standard is blood. It is, when you have a blood meter, ketone and glucose together, it is a class II medical device. And that means it's held to a really high standard of quality because somebody could be adjusting their insulin to the data that they're receiving. And that has to be right, otherwise someone will have a hyperglycemic episode and you don't have a hypoglycemic episode in the car. So there's a real safety that comes on into play.

And so, for our meter, not only does it have FDA certification, but it has Euro CE certification. It also has MDSAP certification, and we follow now even our factory is inspected by the FDA as well to

make sure that everything is right. So those are the three different types and blood represents 70% of the energy in the body. It's the gold standard. It is what all the clinicians and researchers use, because it can be correlated back to an ISO.

Now, coming back to your CKM, continuous ketone monitor, I think they're coming. I believe that Abbott just released a paper, I think in this month in April showing that it can correlate through. So I would expect that Abbott will get there first. They have amazing lawyers and their patent attorneys are absolutely fantastic, and I can't go up against a behemoth such as them at this stage. So you'll see them come on out.

But then the question is total cost of ownership. We've already seen the glucose monitors if you're going to buy one on your own, CGMs are very expensive for that 14 days. It's good data, if you can afford it. Fantastic. But when you look for an intervention, a lot of times like Virta Health has chosen us as their preferred meter. When you look at the total cost of ownership, I mentioned how we test a lot to begin with as being the compass. How often will you need your compass once you know your route?

And so, we look at that, we occupied this space. I certainly think that CGKMs, if they ever come out will be really useful for biohacking and for data scientists and for clinical research. But for the general population trying to change their outcomes, I think we have to look at total cost of ownership.

And for us, it is how do we lower the costs? NCDs are said by 2030 to cost society \$47 trillion. Cost of diabetes in America, type two diabetes is about 300 plus billion dollars a year. And Virta Health has clinically shows that they can reverse the effects of type two diabetes in 55% of people. That's writing off 150 billion straight off the balance sheet, but they can do it. They reduce insulin load by 91%.

Dave:

That would cure COVID, wouldn't it?

Dorian Greenow:

I'm not going to make it any senses of what will or will not cure COVID.

Dave:

If we were to fix 90% of metabolic problems who would get sick? Oh my goodness. No, that can't work. No. I'm sorry, that was supposed to be my inside voice and I expressed it on. So sorry.

Dorian Greenow:

Well, yeah. I mean, exactly. It seems strange for me, that I look at the tragedy of what is the American Diabetic Association, or should we say the American Death Association? Because they have done nothing since they've started to reverse the effects of diabetes. And I'll tell you a little story, I actually sponsored a Tour de Cure ride here in the Napa valley and we had 12 riders and two were at risk, and I worked with Virta Health and we reversed the type two diabetes on those two riders.

And we were the number one fundraising team. We raised \$48,000. And we were training people and I said, "Yes, you can reverse the effects of type two diabetes with a well-regulated ketogenic diet." And the people came over and said, "You cannot say that. You are not allowed to say that." And they'd had complaints from two of the sponsors. And do you know who the two main sponsors were?

Dave:

Probably large soda company, I guess.

Dorian Greenow:

Bio-Rad, maker of insulin and Jelly Belly, maker of a glucose candy. And those were the sponsors of the American Diabetic Association.

Dave:

It's like a perpetual motion machine. They say those are impossible, but clearly they just broke whatever of Newton's laws that was. That's so evil, I can't even say.

Dorian Greenow:

It's follow the money. And it's sad, but at the end of the day, the work that you're doing, the work that we see of Virta Health, the work we see of Volek and Finney and Lustig and [inaudible 00:20:43] and all of these people, this is bottom up. This is top down approach. Change will happen when that revolution is, people have to decide whether or not they want to sign on and it's down one by one; you make a revolution, one person at a time.

Dave:

It's really interesting. There's the Bulletproof lifestyle biohacking and there's the diabetes lifestyle. And it's like, "Welcome to the club. You're going to need some insulin. You need some syringe." It's not the club that you want to be a member of like, "How going to get out of this club really quickly?" But it feels like they're saying, "You can't tell people to leave. The exits are unmarked for our organization." I'm constantly shocked by-

Dorian Greenow:

It's the long goodbye. If somebody says, "Oh, you want to cut carbs out of your life." As if that's terrible, we know what terrible is. Terrible is having deep veins from [inaudible 00:21:35] and having an amputation. There's one amputation in every two minutes in America.

You know what terrible is? Dialysis, taking the blood all the way out of somebody's body and sticking it back in for end-stage renal failure. There's 450 people today at stage renal failure. There's 4,000 people today who've just been diagnosed with type two diabetes.

And it's really hard. It is harder to fix the damage. Why wait until the damage is there? There's prevention world. And that's why Jim and I set up a website. If you look, I'm not about selling a meter, you'll view at our website, you'll see recipes.

We have a chef team that creates 15 new recipes every month. We licensed all the low carb USA videos. There's over 182 hours of the leading clinicians and researchers that were once CME credits, so you can do a deep dive into the medical research that is there. We have how to guides.

We also have a foundation where we use some profits from the company and if somebody say, clicks on our website and reviews a product and they like that with that product or your book, instead of us taking the money, Keto-Mojo, that money goes to the Ketogenic Foundation, which is a 501(c)(3) public charity. And the goal of that is to fund clinical trials and studies into the efficacy and use of ketogenic therapies for the benefit of humankind. Because there isn't this billion dollar pill here, that's funding the science.

So how do we fund the science? Because I have so many clinicians and researchers who are crying out to try and do a clinical trial. And so, we help with pilot trials, the small ones that can then allow them to get the NIH grants, the bigger ones, so we can have greater cohorts of data. And it is that data is what we built around the meter by building the secure encrypted health cloud.

Dave:

It absolutely matters that we have strong sets of data that are organized so that people can, well, push back against how many billions of dollars the American, and really I'm going to call it the British Dietetic Association, which should be called the British Diabetic Association, who gets enraged when I was [inaudible 00:23:39]. It's okay to skip breakfast like, "That American is a bad man." I can't do the British accent very well. I did the Texas one instead. But it's like, "What is going on with you guys?"

Because every member of the leadership of the British Dietetic and American Dietetic Association are morbidly obese, I guess what gives, and there might be one person who's not, and they're [inaudible 00:24:01] and gray, and they're on a treadmill for 16 hours a day to work off their potato chips. I've just had enough of that because I used to believe that. So kudos for putting all the data.

Dorian Greenow:

I 100% agree with you. I mean, for me, here's the trick. As a businessman, and I would look at, if that you could reverse these noncommunicable diseases that means you could lower your healthcare costs in a single payer system. Hold on. Why don't you lower those NCDs so that your taxation of your population doesn't have to be so high to cover it in a single payer system?

And on the flip side, if I was running an insurance company, what I would do is if I could make my population go low carb, go ketogenic and I could track it and so I would know, guess what? I could make that margin spread on those high premiums because now everybody is healthy.

But half of the system is set up that somebody only gets paid when somebody ends up in hospital, instead of we're paying to say, "Let's not have expensive costs." And when you can have a low cost intervention that doesn't cost a single pill, it's just following somebody like you and saying, "Hey, eat this. And you might have a different experience. Try fasting, see what happens."

Dave:

That's brilliant. You just invented the keto passport. And if you can prove with a ketone meter that you have ketones, then you're allowed to travel and go shopping. And if you don't have the keto passport, you can't. This is great. No government would ever consider doing any sort of healthcare related thing to restrict normal things people do without government permission, would they?

Dorian Greenow:

It's sort of crazy, but-

Dave:

I don't know what made that come into mind, just some random thoughts. It's so weird. Now I'm looking at some of the questions from the Upgrade Collective members and guys, thank you for being part of the live audience. This totally helps me be a better podcaster.

Susan's saying, "All right. What's the margin of error for the Keto-Mojo, the blood things versus say continuous glucose monitor?" So when you get a ketone number plus or minus, how much is it accurate and how does that compare to the glucose numbers that most people have tried in this community?

Dorian Greenow:

First of all, CGM uses interstitial glucose, different types of glucose than blood glucose. An interstitial glucose will infuse into the skin. So it's actually delayed by about 20%. So trying to match a blood glucose to an interstitial glucose is difficult because of the delay in time and the way that glucose can move quickly. Now for the actual accuracy of a glucose meter, they have to conform to either the FDA standard or the CE standard.

The CE standard is ISO 15197, which effectively means that 99% of the time for FDA, you have to be within 20% of what would be a benchmark, a YSI STAT bench Analyzer. So within 20%, and that's up and down. So think of it like archery; you got to be kind of, how well do you get your grouping? We know with our meter that 98% of the time, we will be within 15%. And I think it's sort of 95% of the time, we will be within about 10%. And then sort of, I think it's in maybe 46 or 60%. I don't have the stats with me. We are within 5%.

But N equals one is not the way that you do clinical trials. When we do our clinical trials to prove our accuracy, we have to do over 350 tests in low, medium, and high pediatric population, adult population, geriatric population. And we have to all benchmark those all back to a bench, the YSI STAT. And so, you generally know, you're going to get this variance, even if when you're doing back to back testing, that's natural.

Occasionally, you're going to get a funky monkey. I felt funky monkeys were like, "What happened with that? Was there a contaminant that got onto the strip whereas I was doing my test that got into the hole or did maybe they're a slight contaminant that got onto the printer head that prints the enzyme on?" That could happen.

I mean, the clean rooms that we make the strips in, they're all in those smurf suits if you know with the whole thing built like that. And you have to go through special doors and blowers to keep the atmosphere down, and it's humidity and temperature controlled.

But that's kind of like the accuracy you're going to get. You're never going to get as good as a lab test, but a lab test, you're going to have 1000 times more blood on that blood draw than the one fifth of a drop and in a \$45 meter. So it's sort of, people have almost [inaudible 00:28:52] expectations of what you can get out of a drop of blood, and we know how bad that was and that became a billion dollar fraud. So we keep to a legal standard.

Dave:

Okay. So it's plus or minus and plus, it's a single point in time. So you're getting it, and it's either in there or not. With CGM, they're measuring a series of points previously I'm guessing.

Dorian Greenow:

CGMs are done, usually every five minutes is a data point that is done. And remember that is delayed or give you a general trend. Most type one diabetics do not adjust their insulin to a CGM. They still do it to a finger stick. And the challenge with a CGM is you can't do your GKI with that because of the time delay. You really need to have blood and glucose at the same time to do a GKI. So that's why we keep it within a four minute window when we calculate it on our app. Good question, Susan. Thank you.

Dave:

Yeah. I do appreciate that, Susan. So it's reasonably accurate within the clinical standards, and things like that. And since no one does continuous ketone, I've heard commentary on the blood sugar side of things that it probably swings way more rapidly up and down than we would see on a typical continuous meter

because they're smoothing the curve. How much do ketones bump up and down on a minute by minute basis? So if I pull one minute and pull one minute later, am I going to see a meaningful difference?

Dorian Greenow:

No. Glucose moves quickly, ketones move slowly. So beta-hydroxybutyrate is very stable in the blood. So I usually see a steady climb on up during the day and then a steady drop off overnight. I measured myself an hour between, measurements today, I was at 2.5 and a 2.4 which is either being completely stable because they're both within the 0.1 margin of error, which I'm not really concerned about. And it was definitely, since I've done more extended fast, I've found that my ketone levels have changed.

So ketones level will change whether or not you are a beginner, whether or not you're advanced and your body changes over time. I mean, I've been keeping it not as long as you. I mean, when you said '95, I was like, "Dude, you were there before everybody was there."

Dave:

Or I was fat maybe before everyone got fat, I don't know. I was desperate. You'll try anything when you get to that.

Dorian Greenow:

Yeah. Ketones move slowly. What's interesting, when you do glucose and ketones together, especially when you're looking for a trigger food, that could be interesting. Obviously, if you've seen a big spike in your glucose, maybe too many carbs in there for you, whatever your journey that you're looking for. I personally keep my spikes... I try to keep them under 30 milligrams per deciliter. That's, to me is a low carb meal and that still allows me to have wine as well.

So if I'm seeing anything over that, I go like, "Maybe that's too many carbs for me." So if you don't see a glycemic response, but somehow you're seeing your ketones production drop down, you can sometimes ask yourself, "Why did that drop down? And did I perhaps have an insulin response to something that was in that product?"

And some people have a problem with sugar alcohols and that can give them a sympathetic response that can give them an insulin spike. So I personally have no sugar alcohols or not in my diet. I can get away with [inaudible 00:32:17] and I don't mind that and Monk fruit. But apart from that, I personally stay clear with those for me; for others, it's totally fine.

Dave:

It's also interesting if you're allergic to a food or you have a sensitivity that's not a classical allergy, but you eat it and the Bulletproof Diet, when most people couldn't afford a ketone meter like, "How do you know what's going on here?"

Well, if your heart rate goes up by 17 beats a minute or more within 90 minutes of a meal, you probably had something you were allergic to in the meal. And if you eat something you're allergic to your cortisol is going to go up. When your cortisol goes up, what happens to your blood sugar and your ketones?

Dorian Greenow:

Exactly. Blood glucose will go up and the high chance that your ketones will start to get suppressed. And that's how you can use those two biomarkers to help guide you. And you have to do a little bit of

elimination testing. I like to do a baseline every morning about an hour after waking, because there is a dawn phenomenon. As you know, you're going to get that cortisol spike that's going to get you-

Dave:

It's out of bed without passing out, it's a good one.

Dorian Greenow:

Exactly. For some people that can take a little while to blow it off. Most people, it's within an hour. Some people are going to be a little longer. For me, it's just under an hour. And I just generally do my baseline. And once I got my baseline, then I have something to work for. I have something to understand my bio-individuality because again, we could say, "What is the person's baseline?"

Well, it depends on what their metabolic damage is or is not, and how their journey is progressing over time with their fasted measurements in the morning. Those are the key things. And then you just do one before a meal and then you do about one, about an hour, which is, I think that's peak glucose.

Dave:

How soon before, 10 minutes before or a half hour before?

Dorian Greenow:

Five minutes before the meal is what I do, for me.

Dave:

Blood sugars before a meal and anticipation as a meal, it seems like you should do it 15-

Dorian Greenow:

Yeah, a little bit before is what I'm looking for. And then the hour is my peak. And then, you can do at the two hour mark or the three hour mark. So you see [inaudible 00:34:22] Augustino, sometimes does have almost a full GTT when he's eating something or trying it new.

But that depends on how much you want to geek out on your data and what you're looking to achieve. If you're trying to be a little bit more economical on your pricing, you can just do one or two measurements rather than doing the three or the fulls, it's up to you.

Dave:

Check this out guys, if you don't do it perfectly, you're a bad person there. I suspect everyone's cortisol, which suppressed their ketones a little bit. So now they all want to go test more. So they're going to have to get a test strip and then prick their finger, which is also going to stress them out. So it would go up again. So it's basically five minutes or 15 minutes. It doesn't matter, it's close enough for biohacking. That's the moral of the story.

Dorian Greenow:

It is a guide, it's just, what is your North? What is your South? I mean, don't go chasing ketones, chase the results that you've got. Learn how to interpret the data. Now, a lot of people just get fixated on a single measurement point or like, "What about this?" And like, "Well, hold on, we want to look at

trends. We want to see how you're going." That's why we have a great trending graph. That's why we built the My Mojo Health Cloud Connector so that your data can go to your cloud for free.

And then if you're utilizing other systems like biomechanics, neutral sense, life ohmic. Who else have we connected to right now? Carb managers in the works that will be in on that one. And then, working with a lot of doctor systems like Elation, Epic and Validic, and those kinds of things. That data can then start to be used by you to adjust or change your habits or to work what is optimized for yourself, and that becomes the important piece.

Dave:

Every hormone that I know of is circadian to some level or another. You have a circadian rhythm in cortisol in adrenaline in thyroid, and certainly melatonin. We all know about that one. There's circadian cycles for your insulin sensitivity and for typical blood sugar. What is the circadian nature of ketones?

Dorian Greenow:

From my experience, your ketones are generally always lowest in the morning. And they climb on up to during the day. I tend to get my peak just before my evening meal. And then at nighttime, when you don't need the energy, they start to roll on off and they tend to drop on down. Now, obviously am I testing myself when I'm sleeping? No, but I just know that by the morning my ketones are low.

So if I was high the night before and I was low in the morning, one can assume that they dropped off overnight whilst sleeping. And so, that does form that sort of a rhythm with it. Have I done tests to see how making sure that natural light might make a difference to it? No, I have not done on that depth of it. And anybody's willing to do it, let me know. I'd love to hear their results.

Dave:

Are you one of those, I mean, ketosis forever guys or do you cycle?

Dorian Greenow:

I'm pretty much in ketosis forever and only if I kind of... It takes quite a lot of carbs now for actually me to get kicked out of ketosis to be really honest with you. So I don't sweat too much if there's a carrot in something or it's not strictly keto, or maybe there's a chickpea flour on those. And I went out for an Indian meal to have a quarter, or something like that.

I don't eat carbohydrates because personally for me, I'm not into that information. And also, I want to keep between that 1.1 and 1.7 or higher for my personal wellbeing. So my journey is based upon my mental house a lot more than anything else.

So if you think of somebody who has epilepsy or suffers from seizures, would they choose to have a carb that could increase their number of seizures? Maybe they wouldn't. For other people who are doing a different type of journey, I think maybe cyclical keto can work for them. So that's where I come back to the bio-individuality, I'm sort of agnostic. But personally, myself, I don't do carbs.

Dave:

Got it. There's pretty much constant keto.

Dorian Greenow:

Since 2015, I mean, and there're moments where I've seen point three or lower over the time, and that's generally because of wine whilst traveling. My wife's a certified sommelier and there's no truth in

labeling on wine. So we kind of have a journey to see what we can and cannot get away with and we've kind of learned over time, what regions you can drink from and what you can't because we understand the wine laws that are involved in the old world. Sadly, America is the Wild West. There is no wine laws per se, so it's hard to tell.

And most wines in America have been done for the American palette, which has obviously, they like glucose. And so, they push the RS, the residual sugar really high. And why do I know that? I live in Napa valley. I worked in wineries for over 15 years and I know exactly the tricks and trades of what they use to Frankenstein a product for the sake of scores.

Dave:

It's why I look for wine that also has canola oil added so it can really tickle my Unique American palette. And oil is keto, right?

Dorian Greenow:

Right.

Dave:

I'm with you on the old world wines. This was the first podcast where dry farms ever talked about what they were doing with their keto compliance lab tested wine. I haven't talked to them because I've been out of show lately because of all the travel stuff, but-

Dorian Greenow:

Tommy Todd, when we used to party in his house on Tainter Street in St Helena, I knew him pre keto. So we go back a long, long way. So good friends.

Dave:

It's great that you can do wine, but I also have another friend. Wow. I've in fact, he was there. He's one of my friends from the computer security world back when I was a computer hacker and I worked for a company called Trend Micro and a bunch of others, his name's Joey and also a life extensionist.

And he got pulled over in ketosis. He doesn't drink and they had him do a breathalyzer and they're like, "You've been drinking and driving." And he's like, "My ass I've been drinking and driving. It's not possible." What's going on with breathalyzers in ketones?

Dorian Greenow:

Well, breathalyzers, like we said, that picks up on the acetone and those acetone measurements by the roadside is what's spiking that so that causes the false positive to say, "Hey, you've got alcohol." Where you're actually picking up on the acetone. They use a zinc oxide ceramic sensor set that is on that.

So if you know that you haven't been drinking, but you are in a state of nutritional ketosis ask for a blood test because the blood doesn't lie in that respect. Funny enough, my wife actually had a court case and it was boating under the influence. And they tried to use the ketosis defense, but the person wasn't testing and they really didn't know that much about the ketogenic diet. I think the lawyers thought they might get away with it, but they found him guilty.

Dave:

Found him guilty. Well, I don't drink and drive because that would be stupid. In fact, I didn't even drink that often, because it's not good for your brain. But if I did get pulled over, I'd be like, "I'm in ketosis and I just removed my fingernail polish." Which is the other big source of acetone. And I don't normally wear fingernail polish, but if I was going to drink and drive, I'd be willing to do a lot of stupid stuff. So there you go. So those tests are not infallible, we'll put it that way.

Dorian Greenow:

When you talk about ketones, you've also got this thing that different ketones are used in different parts of the metabolic pathways of the body. And as we said, the acetoacetate which is the urine on [inaudible 00:42:48] that gets shunted into beta-hydroxybutyrate pretty quickly and can get shunted back. Acetone is used in a different part of the cycle and is an exhaust.

So there are, I think in the future different uses for it. I think that breathalyzers if they can get them better and more accurate and to an ISO standard, there might be a case for the utilization of that as like, "Hey, what is the value of measuring an exhaust of a car?" Will it tell you how fast you're going? Will it tell you how much is in the tank? Or could it perhaps tell you how clean burning you are? We don't know yet.

When you take a look at a breathalyzer, none of them harken back to a control test. And the science that they use was mass spectrometer, but not a single breathalyzer company has said how they peg and whatever their method is be ACEs, which is a new meetup system or in parts per million, how does that actually correlate back to a mass spec? Whereas with a ketone and glucose meter, we have to correlate back to a YSI STAT. That correlation gives the confidence that the data you're getting is correct.

Dave:

Here's an interesting idea. All right. There's a bunch of attorneys out there who, well, they can't sue over asbestos anymore and the tobacco stuff has mostly dried up because we all know it's bad for you, and they're just looking for people to sue for no reason. And these are the kinds of people who will go to say someone with protein bars and be like, "That protein bar had a half a calorie more than the one before it, therefore you're not labeling right."

And you're like, "Guys, it's called food." Different food has different colors based on the amount of sunshine it got, there's tolerances." So these attorneys just go nuts and they they're basically thugs. So maybe some of the thugs if they're listening, there's a huge class action lawsuit against these breathalyzer people, the people who are doing this without stuff. And if you get that right, imagine all the people who suddenly would not have to pay fines. Well, that'd be kind of cool.

All right. So there you go. Let's get you guys a new sources of lawsuits that would make society better because you have more accurate data for drunk driving. And this is serious though, if you are in ketosis, remember that, "Officer, I need the blood test. I'm in ketosis. I have a medical reason of being ketosis." And your medical reason is, because I don't want to die. There you go, done. That's really valuable keto info, and not a lot of people have talked about that. We just talked about it more in the world of keto.

One thing that's happened when I first started measuring my ketones, I could get my levels up. The more I'm in ketosis, the more they go down. It's not that common to have them above two, even if you're fasting and you're not eating anything or you're eating fat only. So what's going on with the people who are saying, "Well, my ketones are at seven. I'm better than you." Help me understand why ketones go down over time when you're good at ketosis.

Dorian Greenow:

Yeah. That's the classic; don't go chasing ketones, chasing results. And it sort of comes back to the baseline, what is that individual's bio individuality? Again, we don't measure how well your liver can create ketones nor how well your mitochondria can receive them. So somebody first starting and they suddenly might get like, "Look, I got 4.0 on my ketones, I'm raging in that."

Well, guess what, maybe your mitochondria is not ready to receive those. So yes, you are a wash in that, but you're not fat adapted and [inaudible 00:46:23] showed with their fat test study, it's about 12 weeks for an athlete to get fat adapted. But I actually think that there's a longer tail that can occur there.

And then, there can be fundamental biological changes. An N equals one here that fasting can on some people make a profound difference. I mean, that apoptosis, that autophagy, the human growth hormone that comes into play from extended fasts from therapeutic fasts can actually have a profound change on the body. Dave, mitochondria, what is it? About 20% of the body is mitochondria, something like that?

Dave:

Oh, by weight?

Dorian Greenow:

Yeah. I think I somewhere heard someone. Maybe Dr. Nasha Winters mentioned this at one of her seminars, it's about 20%. So if we are fundamentally changing the way our mitochondria work, that's 20% of our body we are able to change at a cellular level. That to me is pretty cool. And I found that once we started going in these longer extended fasts, and actually it was a bit of a sidebar there as you know, fasting is physiological and psychological.

That psychological periods where Papillon dog is ringing the bell at noon, that it's time for you to eat, or when you're just coming back in from work and you're looking for a cocktail or something like that, that psychological piece is hard.

And when I sometimes found myself reaching at the refrigerator, I would take a moment and say, "Am I hungry?" I find that what my baseline is maybe in the ones and then I test, and I'm like in three or 3.5 because now my ketones are very high and I've got a nice blood glucose down in the 60s.

I've got over twice as much energy in my body, so am I really hungry? And what it is then, is then you realize the psychological waves and the wave is usually passed. And then once that wave is composed of that little hunger, and then it makes it easier and you build your muscles up over time. And that for me is, as I built my muscles up over time, my fasting muscles got into the longer extended five days was sort of my max. What do you think is the peak that you can get on HTH and apoptosis, where would you say it is?

Dave:

It's probably somewhere around five. I don't think we have really good data on it, to be honest, we know that they go up for a while, but it's pretty clear that if you were to do an OMAD once a week, or maybe every three weeks do a couple of days, it seems like overall they're within 20% of each other in outcomes. So it's more about what works for your life.

Dorian Greenow:

Yes, what works for your life. I love that. I think that's a great phrase. Especially consider this, perhaps there is a single mom having to work one or two jobs. And if you think, "Do you want to be cooking

three times a day or would it be easier for you to do [inaudible 00:49:25] fast?" What if like two days you decided, "No, I'm just going to fast for two days right now." And I've learned how to do it. Well, and you've just freed up the shopping, there's cooking, there's cleaning. Your life now simplifies it.

I love it when people come down, it's like, "What does it work with somebody's lifestyle?" Because it can't be a diet, it has to become a way of life. It has to become your lifestyle and what fits with you. And that's where we come like, "What fits with you with your geography?" I mean, and that's why we look at it as being, "We're a compass. We help guide you. Your roadmap is going to be different to somebody else's roadmap." And that's the important bit. That's the bit that I love about what we do.

And after a while, the need to test might not be there and that's okay. For me, that's okay. Because guess what, we have done our job. At some stage, you cast off the training wheels. You don't need dad behind you pushing you along. You figured it out and you go off on your own. And to that, that means that's the mark of success. Whereas other people might want you to be on their product for the rest of your life because you've got type two diabetes, and you're about to do the long goodbye.

Dave:

It's actually really high integrity that you're saying that, and that's my experience with Keto-Mojo. I sent the Keto-Mojo out. So I do the Dave Asprey Box every quarter, guys, daveaspreybox.com. And I send out these 200, usually a lot more dollars worth of stuff for about 100 bucks. And I put it in there. I'm like, "This is great. People are getting some test strips, many people are going to get more test strips. Everyone though can use a refresh."

So the way I use the Keto-Mojo is every now and then like, "Oh, I've been fasting for a while. I wonder what it looks like." But I don't have to do every day because I've done it every day for a long time. And even with the CGM, the levels thing, I'm not worried about my levels right now because I knocked it off on the edge of my car, the second time I've ever done that. And I'm like, "Oh, I guess I'll put one on in a while." But it just doesn't really matter if you get the data all the time.

Dorian Greenow:

By the way, we're working with Levels. Hopefully, they'll have their integration done really, really, really soon.

Dave:

That's awesome. I'm an advisor to Levels and investor in those guys. And I can't wait to get my keto, see, that actually make me use my Keto-Mojo more because at least I have continuous glucose and I'm like, "I'm just going to have to do this a couple times."

Dorian Greenow:

Actually, if anybody has a platform even if they're making their own just for their own for that, we have an open API or encrypted authentication. Go to our website, click on the developer section. We've got all the documentation. Now we want to make sure that data is out there for everybody. There's no charge for it and it's for free. So how about it guys? Let us know.

Dave:

That's also really important. All the health informatics companies. You got to make your data available or it does a good job of that as well, and there'll probably be an integration there. At some point, you

can look at your ketones in your sleep. You sleep better with more ketones. I don't know, but you could know because the data's all available now. I appreciate that.

Dorian Greenow:

And even more on that is, I haven't put it behind a paywall. Look, if you're not using my meter, okay, you can still manually enter it. You can still manually sign up to My Mojo Health Cloud Connector. You can still put it up there and it is still for free. I mean, for us it's how do you affect outcomes?

My goal ultimately with this meter is to change the farming paradigm globally. And you can only do that by having a market forcing function is to change the way that people shop because it's not the cow, it is the how. You have words of Joel Salitan. I'm not going to claim that one. Those are great words, Joel; it is not the cow, it is the how. With regenerative agriculture, we can sequester the carbon. Now I look at people who say, "Well, no, pump based is the way to go." Well, have you ever been to a carrot field in the Central Valley of California?

Dave:

I used to live next to one.

Dorian Greenow:

There's no life there. It is just devoid. They've raped the soil and everything with inputs. But if you go to a range land in Colorado on a hill top that is not arable land, you'll see forest, you'll see silvopasturing. You'll see raptors, elk, raccoons. You will see small animals, you'll see biodiversity. And if you looked into the soil, you will see a mycelial mat of fungi that is filtering the water at a micro level, and that's what we should be aspiring to.

If you want to sequester the carbon, eat good; pasture-raised, regenerative agriculture and you will change the world, not how fat, you imagine. It's funny enough that all of our emissions decreased when everybody stopped getting into the car, but they were still eating the same amounts of meat.

Dave:

Shocking how that worked, just shocking. So I live in an organic farm, growing soil, all grass fed, and we're using our animals in my restaurant that opens very shortly in May 8th. In fact, by the time this airs, it'll have just opened in Victoria and I'm 100% with you there. That's just how it works. And I remember an interview with Bloomberg years ago, said, "Dave 10 years from now, what is the big food industry going to be asking itself?" I said, "What are we going to do with all this corn?"

So when people look at their data for health, they look at their ketone numbers, they look at their blood sugar numbers. They look at the environmental impact. They look at allowing raptors, eagles, ladybugs, snakes, and cute turtles and bunnies to live, then they stopped being plant-based and they start eating lots of vegetables, but not a lot of grains because the grains are the problem and we all need our vegetables. That's just how it works. I'm glad that you're onto that because you're looking at the data.

Dorian Greenow:

Well, I'm permaculturally inspired. When we look at the works of Bill Mollison, Geoff Lawton, and the works of permaculture around society, I think that's where, I mean, I had my own garden doing a French intensive method. I made my own compost; hot compost, cold compost and compost teas with worms.

And I would make compost teas from that and then double dug beds, but super intensive four feet by eight feet. And it's amazing what you can make in a small area just for yourself.

If we can now give over some of this corn land back to the pastures they once were. The grasslands of America once had the deepest, most fertile soils. And why was that there? Because the great bison herds that once rolled across this amazing country, they were sequestering carbon for a millennia.

Dave:

You've angered the vegans. You can't anger vegans. They're going to talk about it forever.

Dorian Greenow:

Well, I like vegetarians, but I can't eat a whole one.

Dave:

If you're a vegan and listening, we love you. We're trying to help you with our sense of humor. I was a raw vegan for quite a while. It broke my biology even more, but I felt great at first, which happens a lot.

Dorian Greenow:

I do have a vegan and keto article. I think if that's your ethical reason, go for it. If that's a religious reason, go for it. Yes, you can be vegan and keto if you want to do that. It's a little bit more of a tougher line to walk than others, but it's still doable.

Dave:

It's doable until your cell membranes break because you can't get some of the saturated fats that you need, and then your thyroid goes up and it goes down and then you leaky gut. It's predictable, but some people have to feel the pain before they realize that butter is actually food.

Now speaking of stuff like that, anytime someone talks about a product on the show, I'm like, "Hey, can you get us a discount here?" You go to keto-mojo.com/dave, get 15% off a meter kit, which is awesome. And it's already the cheapest test strip on the market.

Dorian Greenow:

Yeah, you need to put Dave 15 at checkout. And it'll be 15% of all meter kits. Yeah. I'm happy to partner with you guys. It's fantastic to be able to do that, and there'll be a link obviously below.

Dave:

Beautiful. Let's take a couple of questions from the Upgrade Collective, what do you think?

Dorian Greenow:

Yeah.

Dave:

All right. Let's see. Who is going to go first? Tina has her hand up. Tina. All right, let's go. And we won't talk while she's talking so we won't talk while she's talking so we don't get an echo.

Tina:

Great interview. I've used the Keto-Mojo for quite a while and I really love it, but I have noticed something very interesting and it happens more than once. I have a pretty good sense of what my blood sugar is by the way I feel. And so, I often use it just to check.

Oftentimes the first time I check, whether I wash my hands or do a couple of different drops and then it'll read like 105 and I go, "That's not right." And then I check again and it's 80 and I'm like, "Okay. That feels more like." And that's happened many times. So I go through a lot of glucose strips. So I'm wondering what's going on there? Thank you.

Dorian Greenow:

That's a lovely question. So we mentioned earlier about the accuracy of it. It's kind of if you will, archery. Imagine doing archery, but not having a target? And what we don't know at that moment, what was your actual against to a bench? Remember that we said that it was either plus or minus 20% for the FDA and we're within about 15. So you mentioned you had an 80 there and a 105.

What I find that is the reality of it was, you actually had say a 92, that was your real blood glucose at that moment to a bench while your 80 would have been down by 12 points, and then your 105 would have been out by 15 points. So they're way within 20%. So you've actually exceeded the FDA standard and you're actually in with the ISO standard. And one of them was actually better at roughly 10%. And that is when there's back-to-back tasting, you will always see that variation.

Now in some meters and if you go to our website under accuracy, I actually have a clinical trial that we did where we showcased our meter, current one, GK+. We showcased our older one, the TD 4279. We showcased the Abbott meter and the Accu-Chek. And when you're comparing meters, this is the challenge because you don't know whether or not the person's up or down because you don't know, you don't have an actual baseline target.

And we found that the Abbott meter skews low, that they're consistently shooting low below the actual target. Our older meter was pegged to Abbott because that was the standard of the time. Our newer meter, we pegged to the YSI STAT Plus which is actual. And you can see the regression analysis that is on that. But variation between test is normal; 80, 105.

If you were actually 90, 92 in the middle there, you would have only been out by less than 10%. And that means you had a really excellent for what you can get off a drop of a blood, and it's just measured with a drop of blood. We're measuring one fifth of a drop to try and get that. YSI STATs are about \$25,000. If you want to get it tighter on your measurements, you're going to have to spend out I'm afraid for a really good lab. I hope that answered your question.

Dave:

So it's pretty darned accurate, and there's a variance.

Dorian Greenow:

Exactly. You know it's going to be out by that. Think about, I always think within 10 or 15 points; if I was 15 points down from that, would this be okay? Yeah. If your 15 points up from it, would this be okay? Yeah. Is it going to give an outcome? No. Because with all glucose and ketone meters, when they have both together, do you have to go through what's known as a consensus error grid? And there's A, Bs and Cs.

And if you're in A and B, you're okay. If you're in the Cs, you're out of that. What we mean by consensus error grid, it means if somebody adjusted their incident to this product, would there be a

clinical outcome? We are always in the As. So there is no clinical outcome or change because safety is our highest priority. Especially when you look at the likes of Virta Health, Virta Health are using our meter and their prime thing is safety.

Dave:

Hold on a second here. Safety is not your highest priority. It's dangerous to prick your finger. In fact, I think that the death rate on that is like 0.17, or something like that. But if safety is your priority, you shouldn't get any data because it might be dangerous. So let's stop saying that safety is our top priority. Living is our top priority, is it not?

Dorian Greenow:

Yeah. Living a long, healthy life is definitely the-

Dave:

Safety is not my top priority. Safety is stupid. Safe enough is good, and your thing is quite safe enough. So is driving even without a seatbelt. A bunch of voices I tell you. I'll get off my soap box. Sorry, I get triggered.

Dorian Greenow:

That's okay.

Dave:

I need to put a mask on now. Man, I'm just ornery today. I need more coffee. I do have a more specific question. If I prick the side of my finger versus the tip of my finger. I know for blood sugar, it matters. And I know I've given myself type two diabetes apparently once I put my CGM on from levels too far down my arm. And so, it was getting the wrong blood. I'm like, "Why am I 25 points higher? My numbers are nuts."

And of course you take it off, put another one on where it should go and then it works just fine. So it was literally a 25 point difference from four inches down my arm. With ketones, is it sensitive to fresher blood from the side of the finger? Do I need to shake my hand, cold hands? Does any of that matter? As long as you get some blood, it's always going to be the same?

Dorian Greenow:

Not really. Not something of a real statistical. Definitely between like finger and venous, because there's a couple at the end of things. Remember that when you're pricking your fingers, you're generally getting capillary blood. That means blood that is oxygenated.

Quite often from a lab draw, you're getting venous drawn blood, which is deoxygenated. And so, there is definitely going to be a difference between those two things. There's also definitely difference between finger and arm just because of the area that it is, that's for sure.

Actually, the side of my finger is my preferred choice, not the tip because the side of my finger actually has less nerve endings. I like to do it up almost near the cuticle, just like a little bit back off in that mid range. And I alternate between my fingers on different days, which is like that. And because your fingertips, you're most sensitive. So why would you do something in the most sensitive area? You can still get a great bit that's here.

We've seen sleeping children using a device called the Genteel. So especially if on young children perhaps for epileptic children. So if somebody is sleeping, you can do it on the heel, on their little feet. And I've seen some people actually use their kneecaps, especially if they're out to dinner and they don't want to show that they're doing a test. If maybe they're a type one or type two diabetic.

Dave:

Beautiful. Let's do one more question from the Upgrade Collective here. Let's see, Susan, you want to go?

Susan:

Very informative. Thank you for the fabulous information. I'm wondering, what are the common errors that people make when they're using the Keto-Mojo that affects their results and how can we avoid those pitfalls?

Dorian Greenow:

Good one, common errors. Number one, is people actually not washing their hands, believe it or not beforehand, if there's a lotion or potion that is on the hand, that can be a challenge. Number two, I think is sometimes it's not interpreting the data correctly and fixing on an N equals one, as we mentioned they can be up and down by 10 or 15 point. So you want to kind of generally look at your baseline.

That is kind of, I would say the key that we designed on our new meter. A lot of the problems that we had on our old meter. One of the strange things is what I call a super set technology is we actually change the diameter of the hole that draws out the blood, that sips it up. It does it by capillary action, which is really the atomic action of the liquids that is on that.

And on the older one, we used to have not a good feel that it would go up sideways if you will. And we wouldn't get a good feel on it, which means that we didn't get a good read. On this new one that we've almost eliminated out fill errors in that respect.

Occasionally, you're going to get a funky monkey. But the clean things is wash your hands. If you don't know your vascularity or first going, remember that testing is another one, there's a little bit of muscle memory that needs to go on. And then we have a great website that has videos. There are only little ones, like a minute, unfortunately, you'll listen to my voice. I apologize for that.

But we also have a great customer service team that if you do either by a chat or email, our average response time during working hours now is under three minutes on chat or message. Under three minutes, we will get back to you during our working hours. And we usually can have some of these problems resolved in undergrad for four or five minutes, which is really, really good. And the team stretches from Puerto Rico all the way over to the Pacific Coast. So we can hit as many times zones as we possibly can.

Phones; we can do that, but we do it by appointment because phone conversations are always very, very long. So if you are having a difficulty, you can contact us, we'll make sure. We're the only meter that I know that gives you a lifetime warranty on your product and we're very proud of that. That's why we came out with a [inaudible 01:07:18] because we want to know it's right.

So key things, washing hands first, dialing in your lancing device to your skin depths, that can make a bit of difference. So you can get a good sample size that is on there. And these things are just designed to work extremely well. Don't fixate on any cause. One, look at your trends over time and always ask yourself, why am I doing it? What is the outcome I'm expecting from this, and what can I learn from it?

Dave:

Beautiful answer. And I love it that our Upgrade Collective members get to ask questions like this. I think it's adding to the show. The comments on the show are really supportive on iTunes. People leaving reviews, I love the live reviews. Thank you for your really complete answers. And thanks for being such a nerd. You can go as deep as we want on the science, on the tech and what it's doing in the body.

So this has been a really informative, deep dive on measuring ketones and the pros and cons and all the different things, kind of a masterclass on that. And Dorian, thank you for the discount. For listeners, keto-mojo.com, use code Dave 15 and you get a discount. It was already the most affordable test strips on the market. So you can see what's going on. Thank you for being on Bulletproof radio, keep sharing the good stuff. Love your nonprofit. Love the focus on accuracy. And I like being able to test my ketones more than once a day because I can afford it now. So thanks.

Dorian Greenow:

Thank you.

Dave:

If you guys liked today's show, you know what to do. Think about signing up for the Upgrade Collective, go to our upgradecollective.com. Be a part of the community, the live audience. I'm actually looking at people in the Collective right now on a Zoom window. We've been chatting back and forth during the show they've been suggesting, "Ask him this, don't ask him that."

And then, queuing up questions for Dorian, it's a lot of fun and really informative and educational, our upgradecollective.com and the link for Keto-Mojo, keto-mojo.com. Use code Dave 15, save some money. And this is the real deal by a guy who cares, lost a bunch of weight doing this, and it matters. See you on the next show, which is also going to [inaudible 01:09:16].