

## **A New Way to Control Your Blood Sugar – BiOptimizers with Dave Asprey – #807**

Announcer:

Bulletproof Radio, a state of high performance.

Dave Asprey:

You're listening to Bulletproof Radio with Dave Asprey. Today, we're going to get down with biohacking and specifically about blood sugar because there's so much that's come out about how having high levels of blood sugar, even just temporarily after a meal, does bad things for your biology, but I don't know about you guys, but on very rare occasions, I do have something that has sugar in it, and I regularly have carbs, but I do my best to not let them spike my blood sugar.

Dave:

I wanted you to learn about what works and what you can do to keep your blood sugar under control and still eat some carbs because let's face it, most people do that, and unending keto for most people is a disaster, yet occasional keto is good for you. So, how do you walk the line down the middle? That's what the subset is about? I've invited Wade Lighthead and Matt Gallant back. You've probably remember them from a previous episode as the We Fix Digestion guys.

Dave:

These are friends who are always looking for new ways to keep digestion working and to keep your whole body working, and they're looking at how the systems in the body are connected, how the brain and body work together. In fact, they're working on a book about that even. So, we've talked about psychobiotics, magnesium, enzymes, and I do use some of their products quite regularly. So, today. Wade and Matt are going to go in deep around blood sugar regulation with you guys, and we're going to talk about what works in the trenches with people.

Dave:

So, Wade and Matt, welcome back to Bulletproof Radio.

Matt Gallant:

It's great to be here. Are we record holders? This is our, what? Fourth show? Are we the top guys? I got to ask.

Dave:

You've been on four times. The other guy has been on four times. It's Andy Hnilo from Alitura. Andy is interesting. I'm an early adviser for Andy. In fact, he launched his show on Bulletproof Radio, and he's the guy who just, "I did this because it fixed my face after a terrible accident and I'm a model." So, I tend to invite people back who just have a lot of breadth of knowledge and are obsessive about certain things. You guys have been up here to my house, to my studios, and I know how much time you spend on research. I know because I do similar things like that. So, you share knowledge that is actionable and useful.

Dave:

What I like about what you say is that people can choose to use your products, which is awesome, but you're sharing a ton of information with no purchase required. You're just putting good stuff out in the world. So, it's the knowledge today that I want to share, and I'll make it really clear. You guys do have a product that solves a problem you're describing today, and that's good, but people don't have to buy the product in order to benefit from the knowledge here, and that's also important because the show, the ROI for every episode for every listeners, I got more back from the hour I spent with Dave and company than I put into it.

Dave:

If this episode or any other episode isn't like that, I would encourage you if you're listening to say, "All right. Next." There's lots of stuff you can put in your brain. This is meant to be worth your time. So, guys, thanks for coming back.

Matt:

It's great to be here. Always love talking to you.

Dave:

For people who haven't met you guys yet, Wade is a sports nutritionist, three-time Canadian, all-natural, bodybuilding champion, including as a vegetarian, which, man, that's weird.

Wade Lighthead:

We're all in the weird club, Dave, in case you haven't figured that out.

Dave:

Oh, yeah. There's that thing. I meant the Canadian part, not the vegetarian bodybuilder. I say that because I'm up here in Canada, too. Then Matt is a strength and conditioning coach with a degree in kinesiology and a self-defense instructor. Both of you have done many, many biohacks for years, which is really cool. Strength and conditioning and high level athletics or bodybuilding, all of these are areas that I wanted to bring together for biohacking so that we could suddenly have a conversation about nervous systems and things that maybe wouldn't have been there in the olden days of bodybuilding. So, I wanted the kind of expertise that you guys have to come together.

Dave:

Let's jump in and talk about blood sugar. I'm going to push you guys on some of what I think you're going to say, but tell me what does blood sugar do for us?

Matt:

Yeah. So, blood sugar is, obviously, a key component of the digestive process, which is why we've been focusing on it so much. Really, we look at digestion as three phases, right? Consumption, consuming of good quality food, good quality carbs, proteins, and fats, and converting that into usable components, but the thing we're going to really focus on today is the assimilation of glucose, which is either storing it optimally, which is in the muscle tissue versus turning it into body fat, and then converting it into energy more effectively, which translates to peak performance athletically, higher calorie burn, and things like that. So, that's where we're coming from on the glucose side. Wade?

Wade:

A lot of people don't understand it. Most people think that the most anabolic hormone in the body is testosterone, but the reality is it's actually insulin, which is a response to blood sugar. In my athletic career, we were using unusual ways of spiking blood sugar and a correlated insulin response to drive amino acids to increase anabolism. The problem with that was when you get off a bodybuilding diet and go try and go back to a regular diet, your body goes totally haywire, you literally gain, in my case, I gained 42 pounds of fat and water in 11 weeks after I went to the Mr. Universe contest.

Wade:

Well, I went through a whole array. That's what started the background of our company is to learn that, "Well, jeez! We've hit what's supposed to be the peak of aesthetic ideals in this "bodybuilding diet", but it obviously had some seriously negative health consequences because that wasn't baked into the cake, so to speak.

Wade:

So, that's when I switched my dietary. We started doing our radical array of tests and I suspended my bodybuilding for four years before even attempted to go back on the stage again because I realized that what I was doing was actually damaging my health. I think so many athletes or people who are on the bleeding edge of things, whether that's high performance executives or whatever, will often take measures to compete at the level they need to compete at, but they have consequences.

Wade:

I certainly don't discourage anybody from going to be the best that they can at whatever that they're going to do, but I think it's important how do we mitigate our bigger, higher, faster mentalities in a competitive world and mitigating with health stuff.

Wade:

So, today, we're going to get into this blood sugar equation because I think it's a crisis in North America. I mean, it's one of the reasons I think you got into the whole Bulletproof diet and started explaining it to health people regulate the vast array of sugar response that they're getting in their bodies. So, I think we got some things today that your listeners are going to really enjoy and be able to put into practice.

Dave:

Well, I love that you brought up the bodybuilding side of it because I read one of the first books on natural bodybuilding early in the '90s and it said, "Oh, maybe carbs make you fat," and I lost 50 pounds of my 100 pounds in about three months, and I got to be a nicer person because I cut gluten out, which made me really act like a jerk. It obviously gave me opioid effect from it.

Dave:

The other 50 pounds took another 10 years to come off, and that was why I wrote the Bulletproof Diet because it isn't just a single variable, but blood sugar is a massive variable. It's one of the reasons I just invested in levels in one of the few investors and adviser of the company where I could do continuous glucose monitoring because way back in the '90s, the doctor says, "Oh, maybe you have high blood sugar, and maybe that's why you can't lose weight even if you work out six days a week."

Dave:

I came back maybe a month later and all of my fingertips were all scarred up because I just said, "I'm going to get my blood sugar 10 times a day as if I was diabetic."

Dave:

He's like, "You're not diabetic. Why would you ever do that?"

Dave:

I said, "Because you told me I might have high blood sugar and I apparently don't. It's not high most of the time. That wasn't the issue for me. It was toxins and all."

Dave:

When it comes to this, whey protein was a really big thing. Oh, I would use whey protein to raise glutathione in the liver and for a while, Bulletproof made a really high quality whey protein. What I found is people are saying, "Oh, I just had eight scoops a day," and I'm like, "Man, why don't you just go eat a candy bar?" because whey protein raises your insulin like no one's business even though it's a protein. That's why bodybuilders like it, but I'm like, "No. That's why I switched to collagen because it didn't have those effects even though it's not a complete protein. It's complete enough, and it's heavier in the things that are lacking from what a lot of us eat."

Dave:

So, that insulin-like growth factor, IGF-1, it's funny, it's like growth factor, it makes you put on muscle like no one's business. Is there a role for healthy people who want to put on muscle to do, say, oh, an intermittent fast, and then work out at the end of the fast, and then have a soda, like spike your blood sugar because you want to put muscle on?

Wade:

Maybe it's this 40 Years of Zen that you're reading their minds, but I just recently done some experiments on fasting, and I know you have a new book out on fasting. I've been doing fasting experiments for 20 years. So, I'm delighted that you've put that out. So, I've been doing fasting tests to get an insulin pump. Just so people are clear, I have probably one of the best blood sugar insulin regulation systems now that there is. When I do a HOMA-IR test, I'm at 0.4. So, I'm an anomaly in that way. I just manage sugar very well.

Wade:

However, I do lots of experiments with insulin, and the recent one with fasting is I do 36 hours of fasting followed by 12-hour eating window, 36 hours of fasting, 12-hour window. I do this three times a day.

Dave:

You mean three times a week?

Wade:

Excuse me, three times a week, yeah, exactly, and then two days off. So, I did an experiment, I ran it too long. I got myself in a really great condition, but the rebound was a little bit high, and that's a whole

ghrelin response and stuff. I started to get a higher appetite. So, I got my metabolism back and said, "Okay. We need to do this in faster cycles."

Wade:

So, in a recent experiment over the course of three weeks, I did exactly that. So, I was able to drop nine pounds of body fat, pure body fat on a DEXA scan, and then-

Dave:

In a week?

Wade:

No. Three weeks, but here's the kicker. I gained just over three pounds of muscle because of the insulin spike. Now, I'm almost 50 years old, no drugs, no pro-hormones, no anything else. That was simply because of the monitoring of insulin, getting my blood sugar super low, and then loading up carbohydrates to create an insulin spike, to create an anabolic response, and creating training. So, we're running a bunch of experiments right now. That's an early test, but I have never been able to produce that kind of muscle gain concordantly with that amount of fat loss.

Wade:

So, while that to say is that the management of your blood sugar can have really positive effects in the body, but more importantly, I think it can have very negative effects, and a lot of people are running into a lot of trouble with that. Matt's very close to this specifically because his wife's family has had some severe problems about it. So, he's every motivated to determine some of the factors that people need to address when it comes to what happens if you don't regulate your blood sugar.

Matt:

So, my mother-in-law lost both feet due to diabetes a few years ago. She lives with us now. We take care of her. Yeah, it's a pretty shocking experience to see that. Of course, there were some lifestyle issues and it wasn't just diabetes, but it was either that or that to lose a whole leg.

Matt:

I started looking at blood sugar optimization a couple of years ago. Body builders have always been on the bleeding edge of this. I mean, going back to vanadyl sulfate and supplements like that, why? Because if we can, again, shuttle nutrients to the muscle instead of turning it to body fat, it makes a huge difference. When we're in a calorie surplus, which everybody is usually a couple days or weeks. Some people are in there for years. We can become way more anabolic if we take certain things in those calorie surpluses. So, there's a lot of benefits both from dealing with disease or trying to optimize to a superhuman.

Matt:

Now, again, I'm connected to a couple of the top bodybuilding researchers in the planet. I mean, these guys, they take experiments to the next level. So, they gave me some things to start playing with, which I was, and with my wife's mother, my mother-in-law, she hit 640 on insulin. We had to call the ambulance. This was about two years ago.

Dave:

87 is about a healthy blood sugar level unless you just had a meal. So, this is a little bit high.

Matt:

Yeah, and that's on insulin.

Dave:

Oh, my God! So, she is very dysregulated, okay.

Matt:

So, anyways, long story short, come, bring her to the hospital, and then I started giving her some of the things we're going to talk about today, and since that time, she's down to a normal low 100s and stabilize. She doesn't need as much insulin, which is huge. I won't talk about insulin sensitivity because that is such a big part of the puzzle. Then I freaked out shortly after that because my wife did a blood sugar test and she was 240.

Matt:

The imagination started spinning, I'm like, "Fuck! Is she going to get health problems, issues?" Long story short, I gave her the same nutrients we're going to talk about. Her blood sugar went from 240 to 120 in two hours. I've been using these ingredients we're going to talk about for the last two years to optimize, again, refeeds, vacations, and just minimize, either minimize getting body fat or maximize muscle gain. It's just been a game-changer. So, long story short, I've seen firsthand what unregulated blood sugar can do. It's very damaging to the blood vessels, the organs. Of course, it increases the likelihood of stroke and heart disease, vision problems. I mean, if you don't manage blood sugar, you can have a lot of consequences. So, that's why we're really highly motivated to create the best solution in class.

Dave:

One of the things that happens is you get insulin resistant when you go into ketosis and you stay in ketosis. If I could have just handed people the Atkins Diet book, which was the first set of books on ketosis, I wouldn't have had to do the Bulletproof Diet. The reason that I wrote that is that if you go into ketosis, especially with bad oils, which was part of the Atkins thing, after a while, it's like your body forgets how to use insulin and then you don't handle sugar well at all, but this idea of going in and out, in and out was really important and that was that and you don't eat the inflammatory proteins, the inflammatory plants, and the inflammatory fats.

Dave:

Funny, you do that and you end up with something that's sustainable long-term and doesn't cause that insulin resistance. Why do people who go in ketosis get insulin resistant?

Matt:

It's a great question. So, we have lipolytic pathways and glycolytic pathways, and those are either the whole biochemical process of, again, converting carbs into energy and using them or storing them or same thing with the fats. Now, when people start ketosis for the first time, we've all heard of the keto flu, and what's happening there is the lipolytic pathways, the pathways of which you can convert fats into usable energy and use keto as effectively aren't very good, but we know after two weeks they get

better and then once you're fat-adapted, you never lose that, but there is levels of that, which we've talked about in previous shows.

Matt:

The same thing is true for glycogen, right? When people stay on keto without doing carb refeeds, their glycolic pathways get weaker and weaker and weaker. There's some really interesting research that was done pretty recently. So, what they did, they took professional athletes and they starved them of carbs. They put them on keto, and then they carb-loaded them for the event. Now, you would think that, "Oh, well, they were able to perform," but no, they weren't. Their performance went down because their glycolytic pathways hadn't fully recovered yet.

Matt:

So, that was a pretty revealing study as far as peak performance, and I think when it comes to ... Here's another thing, too, that the research has shown almost undoubtedly at this point, which is as far as athletic performance, for power athletes, carbs is the superior fuel. Now, there's, again, debates around ketones for long distance things. You can get close. I still think there's benefit for everybody to doing keto, even athletes becoming fat-adapted. It's very powerful, but as far as peak peak, sports power performance, carb seems to be the fuel of choice. If your glycolytic pathways have been weakened by keto, you're going to struggle. You're going to have some issues.

Matt:

Again, why just thrives off on carbs. There's a huge genetic component to this. We've talked about this on previous shows. I think on a nutrigenomic level, some people thrive on fats more easily than carbs and then vice-versa, and Wade and I are great examples of that. I've always felt amazing on fats, where Wade feels amazing on carbs. So, Wade, maybe you can chat about that bit.

Wade:

Yeah. So, there's a couple of things I think that are involved in your insulin response or blood sugar response, too, is that what's the total meal. I still love the glycemic index, where ice cream would be low and carrots would be high. It's like, "Well, everybody knows that you are not going to get fat eating carrots, but you will probably get fat if you eat ice cream every day."

Wade:

So, in the bodybuilding world, we'd look at the total load. So, we would stack carbohydrates with proteins and stuff. To your point earlier, when I was doing that in 2003, I was a pseudo vegetarian during that time, which I was using whey protein as my only source of protein, and a low quality one because that's all that was available in 2003. That's what preset me up for the insulin mismanagement and the inflammatory responses. So, you learn.

Wade:

Today, I have a high, of course, you know I have a high plant, but the fiber is lowering my insulin response as well, and I'm also using various digestive enzymes to break down the foods that would have ... Some people can't do that, for example, like Dr. Jordan Peterson. He can't have anything other than meat or he goes into a total crisis. That's a family thing that happens for him.

Wade:

So, when it comes to the management of that, it's like, "What is your overall diet? What's your baseline? Then how do you take what we call gluconeogenesis?" which that is, how do you synthesize glucose with using non-carbohydrate precursors? In other words, you're not using insulin or you might be using insulin, but there are other factors that you want to limit the amount of insulin because as a society, our pancreases are both four and a half times the size per body weight of any species on the planet because we eat so much sugar, and that's what involved in the regulation and distribution of insulin and these type of things.

Wade:

So, we have to understand that's a huge crisis, and what are the things that we can do to mitigate it as biohackers without relying on insulin and burning out that pathway? Part of it is with diet. Just as another point, a lot of people don't realize that I used to also use fats as an enhancing performance in bodybuilding. So, I would strategically lower my fats for a period of time, and then as we got closer to the competition, we would load fats in to drive more repartitioning of the muscle to increase the volume of the muscle and decrease the water partitioning effect on the outside of the muscle.

Wade:

So, these are all the things it needs to play with. It goes way back to Vince Gironda when he wrote the Wild Physique and was doing an anabolic-type diet with high fats, high proteins, and then he would go 10 days of clean people out, go to alkaline, he would go off that, and then he would go back again to get these rapid transformations.

Wade:

So, I'll let Matt talk about some of the precursors that we've been experimenting with in order to enhance, particularly, blood sugar metabolism, lower that blood sugar response. He's one of those guys like you that has all the scars on the fingers because he's obsessed. I tapped out after so many experiments. I was like, "I can't do this anymore, guys."

Dave:

It does grind on you. I feel bad for people who've been type 2 diabetics for a long time before we had continuous glucose monitoring. I have learned a lot. Even though I've been doing continuous glucose monitoring for about three years on and off, once I got the levels app that let you track every meal and everything you put in, I was like, "Wow! This is really cool."

Dave:

So, I've also been over the last year playing around with postprandial. In other words, what happens after you eat, especially when you eat carbs, how do you manage blood sugar? I was intrigued when you guys said, "Hey, Dave. You should have us back on."

Dave:

I'm like, "You've been on and off."

Dave:



Then you had a pretty convincing case because, I mean, I know blood sugar management pretty darn well. In fact, of this stuff that we're going to talk about, about 80% of it I already used, and then you had a few other ingredients. I'm like, "God! I never came across that one in that way."

Dave:

So, I think there's really a powerful effect that you can get by taking the right stuff. I want to know what is the benefit biologically if I'm going to eat some carbs, but if my blood sugar doesn't spike very much after the meal and I ate the carbs, does that mean I'm using them or does that mean I just didn't absorb them?

Matt:

It's a great question. I want to start with a few practical things to manage blood sugar that isn't supplement-related. These are maybe well-known, but it's worth sharing, anyways. One of them is just eating proteins and fats with carbs. We know that that buffers the blood sugar response. Now, a couple of other ways to manage blood sugar and kudos to Stan Efferding for really popularizing this idea, which is 10-minute walks after a meal. Now, he didn't come up with the research. The research showed it's incredibly effective, but just 10 minutes of vigorous walking after a meal can drop blood sugar 20 points. So, that's huge.

Matt:

Another big one is cold, which I know you're a big fan of cryo. You got upgraded labs. In fact, cold is so intense. Now, more so if you're soaking in ice, you can go hypoglycemic in 10 minutes. You have to be a little mindful of that. I know people that have gone right on the edge of that because your body is using the glucose to replace the body heat at such an accelerate rate. You're just using up the glucose very, very rapidly. So, these are just practical things that everybody can apply and use.

Matt:

One last comment on monitoring glucose. I'm such a fan of anything that's constant data. You know this from your feedback of 40 Years of Zen. The power of a continuous feedback loop compared to snapshots is exponentially more powerful. So, I love what Levels is doing. I've been aware of them for a while. I love the connecting the meal with the blood sugar response so that you'll learn, right? You'll learn.

Matt:

There's some other really interesting studies that have been done with blood sugar response, eating the same foods, but people are having ... I mean, you're looking at a glycemic index and you're saying, "Well, your blood sugar should go over at this level," and the belief is gut biome, right? We talked about gut biome too much today, but there seems to be a gut biome blood sugar response where certain people have strains that can consume the sugar more effectively. We know that because we've been doing those experiments in the lab. So, there are certain strains that, again, if some people might have, that will actually thrive on sugar and eat it very aggressively.

Dave:

It's interesting. I was talking with Naveen from Viome the other day, and they can now do this really incredible test where they're looking at your mitochondria biology and your gut bacteria, and

unpublished data, but crazy abilities to predict which types of carbs are going to cause a blood sugar spike based on your gut bacteria.

Dave:

So, part of the food recommendations they're making now are more advanced because they can literally say, "Oh, for you, rice is okay. For you, you ought to be going over the sweet potato," or some other thing. That's a huge thing because otherwise, what you had to do is just eat a bunch of different foods and track your blood sugar and figure out, "Wow! I don't respond well to this one. I respond well to this one."

Dave:

For instance, mangoes. Everyone knows, at least everyone who's into this stuff knows, "Oh, mangoes are very full of sugar. They're going to spike your blood sugar, but they have a lot of fiber." Some people eat mangoes and nothing happens. Some people eat them and they just go crazy. So, you're just not going to know unless you have a map of your gut bacteria, which is why I've been a longtime adviser and investor in Viome, and the new test that they're doing, unbelievably effective in order to just tell you, "Maybe that's not the carb for you."

Matt:

Love it.

Dave:

Let's say that, okay, we figured out these are the carbs that don't spike your blood sugar so much. Wouldn't it be nice to spike your blood sugar at least a decent amount because you wanted the muscles to come in and glucose is actually good for the glial cells in the brain? How do you know when too much ... Let's put it this way. After a meal, what is the highest your blood sugar should ever go to give you benefit without causing things like glycation and aging and cancer and all the other bad stuff?

Matt:

That's a great question. I mean, of course, there's such a wild difference in response. I mean, as far as what's optimal from a meal, I would say 120, 130-ish, I mean, that spike. In our experiments, we were eating the same thing every day, a fairly large group of us, and then we were monitoring different responses using different combinations of ingredients, which we're going to talk about and myself, for an example, eating a couple of cups of white rice. I went from 150s down to 105.

Dave:

Using the supplements?

Matt:

Yeah, eating the exact same thing. So, that was a pretty good response. I think ultimately, and I saw it in the gym. So, I want to just talk about what does this translate to and I've been tracking my workouts using an app called Trainerize for about four years now. That week, where I was testing the various formulas, I broke 13 records in two workouts because it tells me when I do PRs, which either meant more reps, more weight. It will track any type of record.

Matt:

I credit it just because of the ability to use the carbs more effectively, translate it into ATP or energy. So, going back to bodybuilding, there's three things. We could frame these ingredients to three categories. The first one is insulin sensitivity, the second one is glucose transport, and the third one is glucose disposal agents.

Matt:

So, when we look at the blood sugar situation, we said, "Hey," which we always do, "let's hit the multiple biopathways," right? There's nine that we're really focused on. I know we're huge fans, Dave, of stacking in synergies. We both know that. We could produce far stronger results and effects with almost any objective or goal if we stack modalities. So, that's what we've done.

Matt:

Now, the first thing we focused on activated AMPK, which things like quercetin, berberine, alpha-lipoic acid, resveratrol, cinnamon, metformin does, InnoSlim does, and AMPK is a nutrient-sensing hormone, and when we fast, for an example, and I'm sure you wrote about it in the book and you talk about AMPK, when you fast, AMPK goes up, and it's believed to be very powerful for longevity. So, maybe you can add a few words about AMPK, Dave.

Dave:

Well, I want to suck your brains versus talking about things like AMPK. It is part of my fasting book. The fastest way is it's written because a lot of people never fast, even biohackers or they might occasionally do an intermittent fast because fasting is too painful for them. So, I wrote the book saying, "Here are some of the basic science about this," but the Bulletproof Diet has intermittent fasting, AMPK, and so does superhuman. So, William Lee has written a great book on fasting. There's so much knowledge about this over the last 10 years, where recreating all that knowledge isn't going to add a lot.

Dave:

So, it's summarized, but this is more the how to do it and how to not feel pain, and a lot of the mindset, the psychology, and then the things to do during a fast, so that you can still function as a human, which isn't a problem once you're an experienced faster, but for most people listening right now, they're going, "Hmm, I fast sometimes, but I pay for it," or "I just don't fast because it's just too much work and I can't figure out how to get it into my life and still be a parent," or a teacher or whatever the heck your job is because when your blood sugar goes low and your cells don't work very well, you get hangry.

Dave:

So, what I believe is happening when we use enough supplements to manage our blood sugar is that, really, glucose has to go somewhere in the body, either it's getting used to make energy. All right. You're peeing it out. There you go, diabetes, right. Maybe it's getting consumed in the gut and turned into something else, although most of the time when you eat anything other than resistance starch and things like that, your gut bacteria are going to metabolize it into various substances.

Dave:

So, what's happening is you want cells that are really good at sucking all the glucose out and doing something with it, whether it's repairing your body, whether it's moving, thinking, whatever, and you

also want cells that can do exactly the same thing with ketones, and that would be a resilient metabolism.

Dave:

Do you have evidence that the kind of supplements that you've stacked together in your blood sugar break through stuff? Is it actually making our cells use glucose more effectively? Is that the endgame for this?

Matt:

Well, that's what the data shows. Everybody was eating the same meal and blood sugar was dropping. So, that's the goal, right?

Dave:

So, you're driving it into the cells more. Okay.

Matt:

You're using it. So, the other thing I noticed and I've been tracking calories pretty closely, and I'll give a tip for everybody who want to figure out what your actual basic metabolic rate is. You basically don't want to be losing weight, okay? For an example, if you're eating 2,500 calories a day for a week and you're not ... There's just some minor weight fluctuations which can happen from water and things like that, but if your weight is essentially the same, that's your metabolic rate, which changes depending through eating more or dieting too long, things like that.

Matt:

So, the thing that I noticed is I needed an extra 500 calories a day not to lose weight. I was trying to maintain my weight that week and the first few days I was losing too much weight.

Dave:

Using muscle or you're losing fat?

Matt:

I was losing the glycogen, right? So, one of the things that happens when you lose glycogen, you'll lose water with it. I've been doing cyclical keto since I'm 16 years old, 43 now. Now, what happens is that when you eat carbs, your weight goes up 8-10 pounds, and it is no body fat. It's just glycogen and water.

Dave:

Let me explain glycogen. So, some people listening are like, "Dave, I already know this," but a lot of people don't. So, glycogen is how your body stores carbs after you eat them, and for every gram of glycogen, there's two grams of water. This is why when you go keto, you're like, "Oh, I lost seven pounds my first week."

Dave:

It's like, "Yeah, you got rid of a lot of water, and you might have got rid of some fat, too," but that's what glycogen is for. It's stored in the liver and stored in the muscles, right? Keep going. Just so our definitions are there.

Matt:

Yeah. So, those were things that I noticed. I want to just keep going as far as the different biopathways when you're looking at blood sugar. So, another one is adiponectin, which is involved in regulating blood glucose levels, as well as fatty acids, again, as far as anybody eating any fats, being on Bulletproof diet, ketogenic diet, et cetera.

Matt:

So, insulin mimetics is another interesting one, and there's some really powerful ingredients such as Tibetan holy fruit that has been shown to be very powerful, so as banaba leaf extract. What they do is they mimic the effects of insulin, so they can promote, again, the entry of the glucose into muscle tissue instead of having it convert to body fat, which, of course, nobody wants.

Matt:

Another big one is improving mitochondrial function and thermogenesis through mitochondrial decoupling, which the most powerful fat burning we are not endorsing, but that's how it worked was DNP. It's the most effective fat-burner ever, and the deadliest fat-burner ever, and it got outlawed many, many decades ago, but it worked through that process. I'm not going to get too deeper into that, but that's a little interesting factoid there.

Matt:

There's some things you can take like bitter melon extract, fucoxanthin. That will improve the mitochondrial function. Then reducing inflammation is a big one. Of course, the term inflammaging has been thrown out there. We've been hearing about metabolic syndromes for a couple of decades now. The primary, I mean, one of the primary drivers of metabolic syndrome or inflammaging is inflammation. It seems to directly impact people's ability to utilize glucose. So, if we can reduce inflammation, it's going to improve, usually, blood sugar response.

Matt:

We talked about glucose transport. That's a big one, right? So, Tim Ferriss released The 4-Hour Body. He popularized the idea of, "Hey, let's increase GLUT4," which is one of those transport trucks for the glucose into a muscle tissue before you eat carbs. Makes sense, but there's certain supplements you can take. I mean, cinnamon is a very well-known one, alpha-lipoic acid. Banaba leaf extract is another one.

Matt:

Then there's things you can do when we talked a little bit about it to improve the carb breakdown and absorption in the gut. Cinnamon is a very powerful probiotic booster. We've proven that in the lab. So, probiotics, their ability to actually grow biofilm, it gets amplified with cinnamon. Cinnamon is very powerful. I mean, it's very well-known that helps with blood sugar, but it actually is a very powerful thing for your gut biome, and we're seeing that in our lab in Bosnia.

Dave:

It's also likely that most of the herbs that we can take are working via gut bacteria, and via direct intervention on things, but even medical drugs, they're finding, "Oh, 95% of it is transformed by gut bacteria," and that's a part of how they're working. So, we're just really starting to understand at a science level what's going on there, and that's why it's so unpredictable what these will do.

Dave:

I like the approach you have where you've put a bunch of these things that are stacked to make sense on managing blood sugar. What I do right now if I'm going to eat carbs is I take chromium and I take vanadyl sulfate, which is an insulin mimetic. Those are very old-school things. They're very cheap. They're available all over the place, and you can vary the amount of those things. I also take cinnamon. I take alpha R-lipoic acid. I take benfotiamine. Generally, that helps really a lot.

Dave:

I have a bottle of bitter melon extract, but, I mean, I'm the last guy to say this, but you don't want to take so many pills so many times a day. I do 150 a day, but if every time I'm going to eat carbs, I got to go to my vitamin cabinet and be like, "Oh, let's open these 10 bottles." I'm likely to open five or six and just be like, "All right. That's enough."

Dave:

I like the idea of putting all of this into a single supplement. So, it's like if you eat carbs, you take this, and it's got a stack, including ... I didn't know about Tibetan holy fruit for this use. I didn't know about propolis as well.

Matt:

So, let me break down a little bit how we went about creating this process. First of all, we consulted with the genius underground bodybuilding chemist, got some baselines, then we worked with one of our key formulators, been in the business for four decades. What we did is we built six different formulas because the challenge with synergies is nobody does research on synergies. Almost every experiment that's done or research that's done is on single ingredients. So, we created six different blends, we sent it for a large group of people, including Dom D'Agostino, who's one of our scientific advisers now.

Dave:

He was in the first 100 people I interviewed on this show before he was as well-known as he is now. Very great guy. I'm glad you got him on the advisory board. He's very solid.

Matt:

Yeah. He's awesome. He runs a CGM. So, he was able to accurately see and saw a great response. We combined a bunch of different ingredients to see what the magic synergy is. The other thing, too, and this is our most expensive product we've ever made as far as our cost because we just went all in because almost on every single ingredient and I know you know this, Dave, because you got the same mindset, this would bring people a little bit behind the curtain. There's different levels of quality. If you want the best of every single ingredient, we're going to pay, right? I mean, we buy and then we blend and combine.

Matt:

So, we did that. I mean, things like the bitter melon extract we used the best in the business, which is Glycostat. In the rat studies, it worked like a fat burner through the mitochondrial uncoupling, which is when the mitochondrial energy is used to produce heat instead of ATP. That's what that means.

Matt:

So, the other thing, too, and berberines become very popularized in this because it's a great ingredient, but there's a better one called dehydroberberine, which is five times higher absorption rate than the classic berberine. So, we've used that as a key thing. It's been shown in a meta-analysis that berberine plus lifestyle was more effective at lowering fasting blood glucose than just lifestyle intervention alone.

Matt:

Now, one of the most interesting ones, you're going to love this one, Dave, is the Tibetan holy fruit extract, which is also known as sea buckthorn, but it's 300 to one extract. One of the cool things about this ingredient is that it stimulates three different stem cells. The research has shown that. We're talking about a 15% boost in three different stem cells, and the ORAC score is off the chains on this ingredient.

Dave:

That's an antioxidant score, yeah.

Matt:

Yeah. It's eight times higher than grape seed extract, which is very well-known. So, very cool ingredient. I mean, same thing with the cinnamon. So, we looked at all the different cinnamons out there. People can use Ceylon cinnamon and they should. One of the things I've picked from you, I just want to give you credit for this tip, which I've been really implementing in my life ever since, and you shared this on stage I think at Bulletproof Conference, is to just go crazy on spices because it's such an easy way to get things like ginger and all these different ingredients and nutrients we can get by just adding spices to shakes and meats and whatever it is. So, I've been going crazy on spices, thanks to you, Dave, and it's a great one.

Matt:

Cinnamon is one of those things, where if you like the flavor, it's easy to throw in shakes, but there are better cinnamons. So, we use one called Ceylon PF, which, again, there's a lot of research and data on.

Dave:

A lot of people don't know, just to pause you for a second there, there's different kinds of cinnamon. There's Vietnamese cinnamon, there's Ceylon cinnamon, and they have different effects on blood sugar. So, they're not all the same thing. What you're using in here is actually an extract of cinnamon, right?

Matt:

Yup.

Dave:

Yeah, and if you take too much regular cinnamon that has all of the compounds in it, that can be not good for you because there's some compounds in cinnamon that you don't want. So, by extracting the good stuff, you can take a lot more of this and it's good for you that way instead of some good, some bad.

Matt:

Yeah. This ingredient here and the research has been shown to, again, reduce body fat even more and increase lean body mass even more than other types of cinnamon. So, that's interesting. Our alpha-

lipoic acid, which increases GLUT4 and activates AMPK. So, again, it's hitting different insulin pathways. Alpha-lipoic acid has been used. I mean, I remember 20 years ago when it came out. It's very well-researched and used because it works. It's a great one to add to any blood sugar management stack.

Matt:

InnoSlim, which we also have in kApex also helps with AMPK and also insulin signaling, which is the PI3K pathway. Benfotiamine is another great one to increase fat and glucose metabolism in the mitochondria, which is one of the big things that we're focused on. We're focused them on kApex. Of course, you do that with high-fat meals. Now, we're doing it with carbs, which is awesome.

Matt:

Then we have GlucoFit, which is a banaba leaf extract. This is a very powerful ingredient. We saw it in the test. It produced some pretty significant boost in synergies compared to not having it. Again, it inhibits the formation of new fat molecules and fat cells, which is huge. So, going back, if you're doing carb refeeds, which, of course, everybody at one point or another, whether it's the holidays, vacations, whatever it is, they're going to eat a surplus of calories. Last night was one of my best friend's birthdays, for an example. I probably ate 4,000 calories in that meal. It was a feast, sushi and a Tomahawk steak. We went all out, right?

Dave:

Nice.

Matt:

It's great to be able to, again, not gain body fat when you've got those calories surplus, which going back to Wade's results, where he gained 3.4 pounds of lean tissue when he refed, that's what we're talking about is essentially using these calorie surplus as opportunities to build lean muscle mass instead of what happens to most people, which is they gain body fat.

Matt:

Gymnema leaf extract is very well-known as well. That's another good one that people can integrate it in making teas. A lot of people love making teas out of it. It's very effective to lower blood sugar response. Here's a pro tip. I mean, people can make teas with the Gymnema and then use it to make shakes with it. I know some people do that. It's a good little tip.

Matt:

Fucoxanthin, very, very powerful. Again, it's another one that improves the production of brown adipose tissue, which is another way you can raise your metabolic rate, which is one of the big benefits of cryo and other cold therapies is turning white fat to brown fat, and it's metabolically active, which means you're burning more calories doing nothing, which is awesome. So, yeah, very impressive results.

Dave:

That's a seaweed extract, if I remember right. It's interesting. I've experimented with that with cold therapy to increase brown fat in the body. It's interesting to see all of these in one supplement because I like being able to not open a dozen bottles of stuff. I look at this, this list of things like that, and I look at the amount of work it takes if I'm going to eat carbs. I'm actually pretty excited about this because



you've got three ingredients that I really have and been using that really allow me to eat carbs as much as I want. I don't want to be in ketosis all the time. I maintain around 10%-11% body fat without a lot of work.

Dave:

I like my life that way, and I don't have to be carb-free. In fact, I truly don't think that's good for you to do for long periods of time. That doesn't count, obviously, if you're fasting. Well, you're going carb-free, for sure. If you're in keto, you're just fasting from carbs. That's what keto is. If you're vegan, you're fasting from meat, and animal proteins. So, fasting is just the definition of going without. You can say, "I'm going to go without ..." sometimes, but the art of resilience is saying, "When I choose to not go without ..." and that is to do something to be able to handle it.

Dave:

You can say, "I just want my body to be so strong with no help, whatsoever, that I'm going to handle it," and that's possible. The difficulty, though, is that in a situation like that, you still are taking the hits. You're getting the advanced glycation. If I don't take anything like that, I can eat a carb-rich meal, and postprandial, I might go up to 160, depending on what carbs I eat, right? It drops immediately because my systems work, right? So, it spikes and it drops, but that spike is an aging spike. So, I always take supplements to keep my blood sugar levels from doing that whenever I can, and then I modify the type of carbs because now that I have the levels tracker, I'm more mindful than I was when I was doing it with just the sensor when I was correlating it my head.

Dave:

So, I feel like I've gotten dialed in, but with the blood sugar breakthrough stack that you guys had put together here, I think this is going to be easier for me to do it, which is one of the reason I'm like, "All right, guys. If you're going to send me a case of this stuff, you're definitely coming on."

Matt:

Easier and more effective. Again, there were some significant differences, and this is where the synergy comes in. This is where the research comes in. We talked about the lab we have in Bosnia, and we're committed to just actually doing real world test with everything we do so we can improve it. Going back to feedback loops, we're obsessed with trying to make not just ourselves better, but the products. That's the power of using data. I think data shapes destinies, if it's good data, not fake data.

Dave:

Tell me about fake data. Where is that coming from?

Matt:

Media, journalists.

Dave:

Yeah. I think some fake data also comes from testing single variables. The biohacking approach is really straightforward. You wanted to get the result, so you throw everything at the problem all at the same time, and you get the results, and your life improves, and then you can start backing some things out to see, "Oh, maybe I didn't need that one at all." What you quickly realize is that most problems

biologically require four, five, six things to really get them dialed in, and some of them may be lifestyle, like going for a walk after a meal or something, but when you're dealing with supplements or even food combinations, it's just complex. It is not single variable. If you try to test foods and even supplements like pharmaceuticals saying, "I'm just going to do this one thing," you almost never get there, and it would take you forever."

Dave:

So, you've done the work of testing lots of things that weren't in here and came up with an MVP list of things. I know it's well-put together because my own research over the last 20 years correlates very highly with yours, but you've got a few things in there that I just haven't looked at, but I know that you guys are doing the real science behind it, which is cool. So, I am going to be not opening six or eight bottles when I have carbs, and I'll just open one bottle, which is okay, which is great. Maybe I can cut my number from 150 supplements a day down to 125 and I'd be okay with that.

Wade:

Chances are, you're probably squeezing some more back to 150 given some new experiments, Dave. I think we're cooked in to the experimental program.

Dave:

Yeah. It's a fair point. It just gives me a permission to try something else. That's a good point. I love that. This isn't something I thought we'd talk about, but what I actually do is every night after I tuck my kids in, I go into this big cabinet that I have that's full of vitamins, and it's got two deep shelves that are full of the ones that I'm actively taking, and it's got my inventory for all the ones to replace the bottles when I go through them. A lot of people end up with something like that in a kitchen cabinet or whatever.

Dave:

What I'll do is I'll say, "All right. Here's the stuff I'm going to take for sleep," and I have a stack of things for that, and at the same time, I'll say, "What am I going to take tomorrow morning?" So, I have my night and my morning handled, and then if I have a meal that day or, usually, it's lunch and/or dinner, then I'll reopen the cabinet and say, "All right. What did I eat and what are the right supplements for that?"

Dave:

What you've done both with kApex, if it's a high-fat meal, I can take a kApex, and if it's a high-carb meal, I can take a blood sugar breakthrough. What that does, though, is it just reduces the amount of time. You can just keep those next to the table where you eat. I honestly think if biohacking is too much work, most of us aren't going to do it. This is a way just to reduce friction so that you don't spend time thinking about, "Oh, I'll just do that," and if your meal had fat and carbs, take one of each and you're good to go, right?

Matt:

Yeah. It will also help even people that are not eating carbs, people that are in a ketogenic diet. You can get deeper into ketosis and produce more ketones. So, that's another aspect of it. Again, if people are doing cyclical keto, whether it's ... There's a couple of ways you could do cyclical keto. Maybe this is a practical useful tip for people. We talked about doing it over ... Two days seems to optimal to reset leptin, which is what I do these days, but there's another way, too, which is to use, and Dom D'Agostino, I love this, the way he framed it, as a performance-enhancing substance.

Matt:

So, let's say you're in ketosis and you got a workout coming, especially if it's something like squats, a hard workout, you could use 80 grams of carbs, make a shake out of it, throw in some Masszymes, some protein powder.

Dave:

What kind of carbs are you talking about here?

Matt:

Well, the ideal ratio is 50% fructose, 50% glucose, which things like honey will produce. So, you can mix ... Most fruits are a blend. Most fruits are-

Dave:

That's basically sugar is 50/50, right?

Matt:

Yeah, yeah. So, you can basically, again, 80 grams. It can be high glycemic carbs because you're just going to be scorching that. You just sip it through the workout and most people will see zero change in their ketosis levels. They're just burning the glycogen.

Dave:

It sounds like ice cream would be ideal for that.

Matt:

If you can tolerate the milk proteins, probably. It wouldn't be too bad, yeah.

Dave:

Yeah, I don't, but you can do a coconut-based ice cream. You really could.

Matt:

Yeah, coconut bliss.

Dave:

Yeah, make a milkshake.

Matt:

Yeah, throw some protein in there, throw some collagen in there.

Dave:

Yeah, that works. Okay. So, you do that during a workout, you're saying.

Matt:

Yeah. We're big fans of-

Dave:

In ketosis.

Matt:

In ketosis, and then you adjust the carb dose based on how tough the workout is going to be. So, if it's just like biceps, triceps, you can do 20 grams, but if it's going to be a big body part like back or legs or sprinting or something that's just very intense, you can go to 80 grams and just scorch the carbs in real time.

Dave:

... and stay in ketosis-

Matt:

... and stay in ketosis.

Dave:

... which is super cool.

Matt:

Well, can I share something, too, that was super wild and super cool? So, when I was testing all the different blood sugar formulations, and this is four of them right here and a couple more on my desk, I was measuring ketones as well just to see what was happening. I never got below 0.3 and on the 10th day of eating 250-300 grams of carbs a day, including mostly white rice, I was still at 0.5, which is something I never checked before. I never checked my ketosis levels eating carbs for that long.

Matt:

I always knew that even after doing two days of carb reloads, on Mondays I'm still in ketosis. So, I don't know if it's the blood sugar ingredients that improve that or that's just how fat-adapted I am at this point, where I'm producing ketones even when I'm eating carbs.

Dave:

Are you having MCTs with them at all?

Matt:

I wasn't having any MCT during that experiment.

Dave:

You weren't, okay. What I've found is that if I just do a Bulletproof coffee in the morning, it doesn't matter what I ate the night before. I can eat a pound of sushi with white rice and everything. My ketones will reliably go up to 0.5, and 0.5 is that magic number that turns off hunger because of CCK and because of ghrelin. So, if you're doing that endogenously, that's pretty amazing. You're eating stupid amounts of carbs and because of your exercise, and because of your supplements, you're not having a negative effect. You're not exiting ketosis.

Dave:

There's a great debate. There's the keto bro crowd, "If you eat a carb again, you're a bad person." For them, more ketones is better. I feel like having high ketones in the blood is just like having high blood sugar. It's an energy substrate that you're not using because either you didn't move or your cells can't use it because of a problem. So, I like to keep my ketones around 0.5. If they go higher, great, but they don't need to be a lot higher, right? I'll look through my blood sugar, about 87, unless I'm using blood sugar because I ate some carbs and they'll go up and they'll go back down to normal levels.

Dave:

Some days, especially if I didn't sleep, my blood sugar will be at 90, 95, right? That's okay, too. It's not the end of the world, right? So, it's that big spike after meals and it's chronic elevation that's a problem. We don't know if chronically elevated ketones because we're using salts or esters is a good thing. I suspect it's not. I have concerns about kidneys from the salts and about liver from the esters just from what I've seen, which is why I haven't made a product that does either one. I'm okay if you want to spike them occasionally, but it's that daily use of those that I think would be a problem just like daily use of maltodextrin to spike your blood sugar because you just wanted to do that. Neither one of those seems that smart. I feel like we're going to get there, but you guys have a different perspective on that. Do you think that that perspective is accurate? You've done stuff in the lab I haven't.

Wade:

One of the things that I think philosophically we adapted and you were so generous to write the forward to our Blueprint for Biological Optimization, and that is the minimum effective dose, the maximum effective dose, and the optimal effective dose. As biohackers, we tend to move to the maximum and pull back as you suggested, and the medical community tends to go to the minimum effective and tries to get to some what they quote unquote is normal.

Wade:

If your numbers are normal by your general practitioner, go and stop everything you're doing and get all Dave's books and start changing your philosophy because normal is not good. It actually means that you're set up as the New England Journal of Medicine suggested that you're headed on to dependency, disability adjusted lifestyle by the age of 60. That was by Professor Olshansky in the New England Journal of Medicine.

Wade:

So, going back to the philosophical aspect of how do you take a supplement and how do you monitor it so it's the effectiveness as what I would say a responsible biohacker is, and that is, No. 1, you set the parameters of your lifestyle and understand what is your insulin regulatory components, what is the dietary responses that you do better on fats, better on carbs, better on proteins, whatever that is, what's your risk from a pulse test, your heart disease, your genetic background, what's your gut biome doing.

Wade:

First, you need to set all of those parameters in place. You've suggested all of these things. You advocate these things at your Bulletproof conferences, and you have a whole array of experts that's setting that. So, I want people to first recognize we're not talking about randomly shotgunning products because we think it does this. Set those parameters first. Then as you go on the diet that seems to be best working

for you, you can run these experiments where you can ... because as a biohacker, we're really into the N of one because it's really the only thing that matters is does this work for you, which is the opposite of the medical community.

Wade:

So, you do an experiment, you say, "Okay. I know these parameters. I got my continuous blood sugar monitor now, and now I know that I have this response to my blood sugar, and then I'm going to try this product. I'm going to take one cap of this or two caps of this or whatever it happens to be, and see what the responses in my own body and run that experiment for 30 days."

Wade:

By doing that and then you take the data and you correlate it with your biofeedback, in your biofeedback and, "Jeez! I woke up this morning and I was really hungry. Okay. What was my data numbers? Then the next day I did this, but I woke up and ate the same thing, but I'm not hungry," like you talked about for Bulletproof, for example. In my fasting, I look at the difference if I fast completely without anything or I walk down the Bulletproof and I have a Bulletproof coffee. There's a difference. If I have a Bulletproof coffee and I jump in the cryo chamber, there's a difference. So, I can regulate these things and experiment.

Wade:

So, as great as our product is and it's really awesome, I want to also caution people. You can't supplement your way out of a bad diet, and you want to take data, and you want to correlate it with biofeedback. Then what happens? I'm sure you're very tuned in like this, is you can take a product independently now because you got so much data and correlated information, and you go, "This feels like it's doing something. Let's see what's happening," because you got a good baseline of what's happening in your body.

Wade:

So, I want to be just conscientious in letting people know that you can't supplement your way out of a bad diet. We're not suggesting it, but if you're looking at blood sugar and you want to run some experiments, I think you're going to be delighted with the results of what we've been able to produce here, and especially if blood sugar is an issue in your family, your genetic history or that sort of thing.

Wade:

I'm lucky it's not an issue for me, but our mission is to end physical suffering and activate what we call biologically optimized health. That's why we're on the show. That's why we do this. That's why we do this. Matt's family, which is an extension of my own, there's a big issue over there, and we've got to solve it, and it's a big issue for a lot of people. So, if we can solve those issues for people, we're excited about it.

Dave:

Given what's going on in the world right now with viruses and things like that, which shall not be named, thank you algorithms, pretty much everyone other than 6% of people who die not just from the most famous virus but from many of the other ones out there, these are people with diabetes. They have blood sugar and metabolic regulation issues. It's one of the preexisting conditions. It's one of the four

killers in my book on aging. It's the worst one because if you have diabetes, your risk of the other three remaining big killers goes through the roof.

Dave:

If you have diabetes, your cardiovascular disease risk goes up dramatically. If you have diabetes, your cancer risk goes up dramatically, and your Alzheimer's risk goes up dramatically. So, if we were to just put on our thinking hats as biohackers and say, "Which intervention has the highest ROI for reducing my odds of dying from everything?" Regulating your blood sugar would be very, very high on the list, probably more important than exercise, even though exercise can be a method of controlling your blood sugar and exercise and movement are important, no doubt about it.

Dave:

If you didn't move around and your blood sugar was highly regulated, you'd be better off than if you had irregular blood sugar and you moved around. It's that big of a deal. This is that I take air and I take food and I combine them to make electrons. If you have diabetes, you just have blood sugar regulation issues, you suck at the basis of staying alive and you have to fix it. That's why I think this is the right time for everyone to focus on their blood sugar levels, and do it with fasting. Do it with exercise. Do it with cyclical keto. Do it with all of the different things you can do. Do it with sleep.

Dave:

I find that, for me, this stack is a really powerful idea. So, I'm excited to switch over to blood sugar breakthrough instead of opening all the things I was opening ahead of time and I'm getting a couple new ingredients I haven't played with yet, which I'm pretty excited about.

Dave:

Now, you guys have a habit when you sponsor a show of coming on and giving people a deal and I asked you to do that because, hey, if you're going to listen, I told you guys you're going to get an ROI on it. If people go to [bloodsugarbreakthrough.health/dave](https://bloodsugarbreakthrough.health/dave), you can use code Dave10 and you get some savings on this. I would encourage you if you're not tracking your blood sugar at all, it is dirt cheap to get a little finger prick thing. You'll use it four or five times because it sucks to prick your finger or you could get a continuous glucose monitor if you really have weight to lose. It is the best kind of biofeedback. Do that. Get the blood sugar breakthrough product. That's [bloodsugarbreakthrough.health/dave](https://bloodsugarbreakthrough.health/dave). Go there, use that code, Dave10, and see what happens when you eat carbs and then see what happens when you eat carbs and you take blood sugar breakthrough. You can measure the difference. It's very, very obvious what's happening here.

Dave:

Before we go, if someone's already pre-diabetic or already diabetic, do they need to worry about, "Is this going to lower my blood sugar more than I'm used to?"

Matt:

Well, going back to my mother-in-law, again, obviously, she's diabetic. She was using insulin. She was 640. This has gotten her to low 100s and reduced her insulin dose. So, it's been a game-changer, and it's a little bit weird using your mother-in-law to be your experiment, but she was very happy, and she loves the product. She's so grateful. So, that's the power of creating stuff that works is you can help people.

Dave:

The flip side of that, though, is that if someone's listening and they have high blood sugar or they're on insulin or they know they have diabetes, you need to monitor your blood sugar if you take any new supplement, whether it's this one or another, because a lot of supplements can help you have mitochondria that work better, which means they use glucose more effectively.

Dave:

So, just track your numbers, and if you know you're dealing with this stuff, see what happens when you have blood sugar breakthrough and then talk to your doctor. If you find, "Wow! I think I might need less insulin," you don't necessarily want to go hack that yourself unless you're very well-regulated, but if you see positive changes, I wouldn't be surprised because this is about making your cells do what they're supposed to do, not about any treating or preventing a disease.

Dave:

Actually, I will say it is about preventing this thing called aging, which I consider to be a disease, but there's just been so much written superhuman. I read a lot about what happens when your blood sugar goes up. It ages your tissues. AGE, advanced glycation end products, and those go in and they gum up the workings of your cells, so other parts of the cells that aren't energy metabolism don't work, things like lysosomes.

Dave:

So, as a biohacker, if you're listening to this or maybe you're saying, "I don't want to be a biohacker, I just wanted to live a long time and feel good all the time," you got to own your blood sugar. You can monitor it. That's great. You can do something when you eat carbs, so that you don't have to take the hit, but you actually get the benefits of carbs, and there are benefits from carbs.

Dave:

So, guys, you've done a great job of explaining what this is and a really good job, "I'm putting together a set of ingredients that work all together," and then testing it before you launch it, which is why you've earned another spot on the show.

Wade:

Thanks so much. Anybody that tries our products, too, I want to be clear, too. Go ahead and run your experiment. Send us the results. We'd love to get that feedback because I think it's always fun to get the testimonials and stuff, which we love, and that's good, bad or ugly, but here's the great news. If you try any of our products, and for whatever reason you don't see the benefit, let us know, you'd get a refund. It's really that simple. We de-risk it because we're all on this together and we hope that we earn people's trust to try our products, but we don't expect them if they don't deliver on what we hope they do. Send that bottle back and you'd get a refund, and that's it. No must, no fuss, and you go back and try another experiment with something else.

Matt:

Last note on the product is that most people will see an immediate impact. You take the capsules usually 15, 20, 30 minutes before meal. However, a lot of the ingredients accumulate in the cells and have an impact overtime. So, you're going to get an improvement day one, usually, and then further



improvements. We saw it. These people who are running the tests, their fasting blood glucose where there are spikes were getting flattened more and more as we ran more experiments. So, it's pretty cool. It's an immediate impact, and medium long-term impact as well.

Dave:

All right. Well, I am switching over the blood sugar breakthrough from the stack of other bottles I've been taking and being very familiar with the supplements market, I've formulated a bunch for Bulletproof. There isn't anything like blood sugar breakthrough on the market today that I've been able to find. There are a few stacks out there, but this is a very complete one.

Dave:

I'm also planning to keep taking chromium and vanadium because those are essential minerals, anyway. How come they're not in here?

Matt:

No, chromium is in there.

Dave:

Oh, there's chromium. There's just not vanadium. I missed chromium on the list. Okay. Cool. Why not vanadium?

Matt:

Yeah. A lot of it has to do with how much you could fit in a capsule.

Dave:

There's that.

Matt:

Most people, and it's been an interesting thing in the supplement side, we're trying to products where you have to take less and less capsules. There are certain products, for example, that people promote that you need seven capsules produce some effects. Some of our enzyme stuff are like that. With this product, we wanted to try to compress as much as effectiveness in one cap, and the vanadyl takes a lot of space to get an effective dose.

Matt:

We got some stuff in here were 2 mg like the fucoxanthin. That stuff is hyper potent. You're talking just a couple of milligrams is what is used in the research. So, we love ingredients like that.

Dave:

If someone like me, 200-210 pounds, just a wall of muscle, okay, not really, almost muscular is what the New York Times called me, but, generally, I have legs like tree trunks. It's genetic, I think, and so lots of muscle mass in there. Can I take two of these?

Matt:

Yeah. Yeah. I mean, I recommend most people take two caps before a high-carb meal, again, it depends how much you're eating. If you're going to be eating a 4,000 calorie meal like I did last night, four caps.

Dave:

So, you basically say depending on how carby the meal is and how big the meal is you might take an extra one.

Matt:

Yeah. It's the same advice, too, with the enzymes, in general. Usually, one cap per 250 calories does the trick. We had guys, when we launched Masszymes, we tell this funny story. We'll wrap up on this story when the guys were doing the crazy spike days with the Masszymes back in 15 years ago.

Wade:

Yeah. When it comes to biohackers, if you give them a little bit, boy, they'll just go wild with it. We had guys doing experiments with our enzyme products, eating in excess of 12,000 and 15,000 calories a day on spike days and saying, "Hey, I feel great because I took all these digestive enzymes."

Wade:

We're like, "Whoa! Okay."

Matt:

Took 100 caps.

Wade:

"We never measured your inflammatory markers," which are probably off the charts. So, you don't have to be conscientious of what you're doing.

Dave:

All right. You give people tools, they can still smack themselves on the thumb with a hammer. So, it happens. All right, guys. Thank you for sharing some really good information about blood sugar, blood sugar regulation, stack of supplements that work, and for our listeners, like I said, you don't have to go out and pick up blood sugar breakthrough. It's just easier. I think easy is really important. We talked about many of the ingredients here. You can look all those up. You can look in the show notes, and what you're going to find is that each one of them has a clinical data behind it, a lot of that is on the website. Go to [bloodsugarbreakthrough.health/dave](https://bloodsugarbreakthrough.health/dave) and use code Dave10, and just try this for a month and see the difference. It's pretty remarkable when you realized, "Oh, I can have some carbs. I just have to do it right." Have an awesome day.