

Caspar ([00:01](#)):

I'm gonna start this podcast episode plagiarizing some things from our guest. New book, diabetes is one of the oldest diseases of civilization ever described Today. It's estimated that up to 400 million people in the world have diabetes. The World Health Organization predicts by the year 2030 diabetes will be the seventh leading cause of death in the world. Based on that estimate, global expenditure on diabetes and its related healthcare will exceed 1 trillion. Well, the book we'll be speaking about today may provide the blueprint to see if we can avoid all this doom and gloom from happening. This is the story of the Blood Sugar Fix with Dr. James d Lan Antonio, doc, great to see you again. Fifth time on.

Dr. James DiNicolantonio ([00:47](#)):

Thanks for having me back. Casper,

Caspar ([00:49](#)):

Listen, you, you nail these books out and they're always on these kind of really important subjects that I think often get overlooked. You know, when you talk about something like blood sugar, I'll, I'll actually paraphrase from the book itself. You wrote, Greek physician Aus wrote diabetes as a dreadful affliction, not very frequent among the men. So you, you hear that and you say, okay, well today it's, it's pretty, you know, widespread. What changed since the time of ESUs in second century AD to today where we have an epidemic impacting so many,

Dr. James DiNicolantonio ([01:27](#)):

Probably the biggest change, like in relation to blood sugar levels increasing in the increased prevalence of diabetes would really be refined sugar. I mean no, no shocker there, right? Both from the sense of now 75% of all packaged foods contain added sugars, but also from the fact that we went from consuming just maybe 10 gallons of, of like soft drinks per year in like 1950. And by 1975 it was like 55 gallons. So there was like a fivefold increase in soft drink intake basically from the fifties to like the seventies. So when you have all this refined sugar, I mean, it's crazy when you think about it, if you break it down into the fact that like, we used to only get like the amount of sugar in a can of Coke in like 1900 all year, and now we're consuming like, you know, two or three of those per day in regards to the amount of amount of sugar that's really the driving force and it's really the children, I think I've mentioned this to you before, the fact that like anywhere from 25 to even up to upwards of 50% of children's total caloric intake is coming from added sugars.

Dr. James DiNicolantonio ([02:37](#)):

And by the time, you know, you're 16, 20 years old, you're metabolically broken that you can't even really handle much more than 40 grams of sugar per day.

Caspar ([02:46](#)):

Yeah, we've spoke about this before, how addictive sugar is, you know, you're talking about like on level of cocaine, other things, and that's the sad part. But, you know, it's been established that sugar is a causing agent in insulin resistance. But is there a scale to it as far as what types of sugars? Yes, we've seen, you know, all the kind of crappier corn syrup and everything come in, but are there things we shouldn't be demonizing as much in sugars? We need some sugars, correct. So can you give us like a scale of, of the worst to best sugars?

Dr. James DiNicolantonio ([03:20](#)):

Yeah, so I mean, of course it always comes down to quantity. So you do have your healthier, more natural sugars, like honey, a hundred percent maple syrup. And then on the other side you have high fructose corn syrup refined, you know, table sugar, which is obviously lacking any type of other anti-inflammatory molecules because it's just coming in a bottle or coming in a spoon and not packaging a whole food that's gonna provide other constituents, right? Mm-Hmm. <affirmative>. So you definitely are better off, you know, getting, you know, natural sugars from fruits and from honey and, and maple syrup. Now that being said, you still want to pair those with protein fat to curb any type of excessive sugar spike, because o if you have a lot of those, you can end up going hypoglycemic and it leads to a vicious cycle. So there's always a happy medium, but I definitely think there's been an o over demonization of all sugar, for sure.

Caspar ([04:12](#)):

Yeah, it seems that way that, that we can't quite decipher, you know, what is what here and we just lump sugar together. Now another part of the equation is the, you know, usage of artificial sugars. So you have things like saccharin, superlo, which is SP Splenda, asam, which is equal, and many people do replace regular sugar, let's say, with those just for the calorie content of zero and thinking they can lose weight. But is it really safe? What does the research say? I know you wrote about it in book, but is it safe?

Dr. James DiNicolantonio ([04:46](#)):

So, according to the fda, they have set levels that are considered safe, and there's been actual human clinical studies giving amounts of saccharin and amounts of slo, which is in, you know, things like SP Splenda below or at that threshold that's considered safe, that has been shown to not only lead to gut dysbiosis, but an increase in insulin resistance relatively quickly, like within just a week of consuming that. They're, they've tested other ones you know, such as stevia that has not shown that effect. So there are certain, basically, let's call 'em non caloric sweeteners that have been shown to induce insulin re assistance fairly quickly. And those two would be the, again, saccharin and slo and the ones that are, have not been shown to induce that would be like Stevia, monkfruit and even asam, I mean, as Peram obviously has a lot of animal studies that are showing, you know, you know, cancer and this and that, those doses would be very, very hard to reach from a human intake. But in the human clinicals, aspartame didn't induce that insulin resistance. It was really those two saccharin and s sulo.

Caspar ([05:57](#)):

What about something like a xylitol, which you find sometimes in, you know, toothpaste or gum because of the bacteria kind of inhibiting factor,

Dr. James DiNicolantonio ([06:05](#)):

Right? Those also don't really seem to induce insulin resistance, although they do pull water with it in the gastrointestinal system, and there is more gastrointestinal disturbances you know, more watery stools, things like that.

Caspar ([06:17](#)):

Yeah. So let's move on to some things beyond the sugar factor, which is so prevalent and a lot of people do, you know, focus on that. But how do oils and fats play a role in blood sugar?

Dr. James DiNicolantonio ([06:30](#)):

So insulin resistance can sort of be thought of as, you know, many, many factors can cause that, okay, simply overshooting on your blood sugar consistently, and then overshooting your insulin can make the body desensitized to insulin. So that's one way to induce it. Another way to induce it is through inflammation. Okay? So if you can if you basically use these refined seed oils and you cook with them, you're going to create a tremendous amount of oxidative products that can, you know, basically damage your cells and lead to insulin resistance through a different pathway. So the studies that show I, if they're looking at things like, you know, non-processed omega seed oils and you don't cook with them, they don't really show harms, but as soon as you start cooking with those oils and then you consume them, then you're starting, you're gonna see all those harms that we just discussed.

Caspar ([07:21](#)):

And then when you, we, when we switch over to even the micronutrients, which ones do we need to pay attention to for insulin resistance and the factor of diabetes?

Dr. James DiNicolantonio ([07:31](#)):

There's several micronutrients, and I'll list them off that are very key to blood sugar. Now, really when it comes down to it, every single one is important, but there's, there's key ones. The first one, and probably the most important would be, or vitamin B one. The second would be magnesium, because it's required to put thymine in its active form in order to metabolize glucose in the body. The third one would be sodium. So not getting enough salt. We just published a review paper on 23 human clinical studies showing that low salt diets, induced insulin resistance, elevated insulin levels, et cetera, chromium is also very important for insulin as well as potassium, and then even copper as well. So really those six are really, really key. And we can kind of dive into each one if you want.

Caspar ([08:19](#)):

Well, the, the one that, that interests me a lot and the one that you call the secret insulin amplifiers, chromium, a lot of people look at that chromium chromate, like as a supplement to take for insulin, diabetes, all these other things talk about that and why you called it the secret insulin amplifier.

Dr. James DiNicolantonio ([08:36](#)):

So chromium is released from the cell when you consume glucose, it's released from the cell to enhance insulin's effect. So without chromium insulin doesn't really work that well. And from also a fat burning and also muscle growing perspective chromium is very important to amplify insulin's effect for muscle growth. So even clinical studies giving chromium have not only shown weight loss and improvement in insulin resistance, but actually improvements in lean tissue mass gain. So from enhancing insulin's perspective, chromium is right there. To do that, what's really interesting when I started learning about chromium is it was, it was a nutrient just like B one that I thought, oh, we get so much in the diet versus, you know, what's recommended that we should get, no one's really deficient, we should be fine. But when you actually start thinking about the things that deplete chromium from the body, like a high refined carbohydrate or high refined sugar intake or exercise or sweat, when you sweat, we lose actually a good amount of chromium.

Dr. James DiNicolantonio ([09:38](#)):

Then you can start to see how like, if you constantly go into the sauna but you never replace chromium back that can be an issue. And the real key too is that when you lose chromium, it's bioavailability is only 1%. So if you lose seven micrograms, which is typically how much you'll lose in an hour of sweating, you

have to consume 700 micrograms. Cuz you're only gonna absorb 1% of that to get it back. So it's a, it's one of those nutrients, like very few nutrients have that low of a bioavailability, or if you lose it, you have to get, you know, a hundred fold back to replace it.

Caspar ([10:15](#)):

Is that why people, I, I know people that sauna like once or twice a day and just, you know, live in the sauna kind of detox, detox, that's their whole thing and you know, hydrate as well, but they're not probably hydrating with enough mineral salts and everything else. Is that why many may find themselves deficient and almost in a state where, where they're not truly helping themselves by sauna so much without replenishing?

Dr. James DiNicolantonio ([10:38](#)):

I, I totally think, yes. Yeah. Particularly the loss of, of sodium coppers tremendous loss too. Through sweat you lose a lot of nutrients and you know, if you're not replacing them back including chromium, then you're gonna have, you're gonna have a lot of issues with energy levels for sure.

Caspar ([10:57](#)):

Yeah, I mean, it's unfortunate cuz we, we put such a, you know, high regard on these things like infrared saunas are just going in and sweating. We need to do that more in movement, but we don't look at the flip side that we are depleting in some ways. And if we don't replenish, we're in a worse state. And, you know, speaking of all these things that, that we're, you know, looking to optimize, we cannot forget about one of the biggest elephants in the room, no pun intended. Obesity is really like this thing that, that, you know, when you look at diabetes blood sugar, insulin resistance, not to fat shame not to put anything, but how big of an issue is the, the carrying of visceral fat, the lack of exercise and heavy weight. How, how big of an issue is that and how correlated is that to diabetes and insulin resistance?

Dr. James DiNicolantonio ([11:49](#)):

It's almost like the chicken or the egg. And I think we still don't even know, you know, what's coming first and what's not, because, you know, you start putting on, or you start consuming a lot of refined sugars that directly causes visceral fat gain. So it's like the, the, the cortisol and the increase in the insulin is causing the visceral fat gain, but then the visceral fat gain is leading to worse insulin resistance as well. So it's like a vicious cycle. You'll be hard pressed to find an obese person who isn't insulin resistant. So I think, you know, a lot of times what's driving that is both insulin and leptin resistance. So, you know, in regards to obesity,

Caspar ([12:28](#)):

You know, it leads me into something you, you wrote about metabolic flexibility. What does that mean and how can we promote it? Cause I think it falls in line with this idea of, of, you know, being in the proper healthy weight class,

Dr. James DiNicolantonio ([12:44](#)):

How I view metabolic flexibility is being able to handle like a reasonable amount of carbohydrates. That's kind of how I view it. Like if you're consistently in ketosis, you're not metabolically flexible when you consume carbs, you're going to have a very insulin resistant, you know, glucose curve. Which is why when you are in ketosis for a long period of time, you're on a low carb diet. Before you get an oral glucose tolerance test, you're supposed to consume like 150 grams of carbs for two weeks, be otherwise

your glucose curve is gonna look diabetic or pre-diabetic because you are, you're just not used to utilizing glucose's fuel. So you wanna be in a state where you are able to handle a fairly decent amount of carbohydrates. And really that comes down to being, you know, active exercise, having a good amount of muscle mass, getting your micronutrients in, et cetera, et cetera.

Caspar ([13:37](#)):

Well, let's talk about that diet. You call it the blood sugar fixed diet within the book, but what does that look like as far as proteins, fats, carbs, you're, you're saying carbs are not the enemy, even sugar is not truly the enemy as long as it's in the proper ratios and everything in quantities. So what is the blood sugar fixed diet?

Dr. James DiNicolantonio ([13:54](#)):

So it's kind of like a, like a scale grading depending on what your baseline carbohydrate tolerance is. So if you're, if you are type two diabetic, then a lower amount of carbohydrates is important to allow you to get used to in your body used to handling the carbs as you become pre-diabetic. So let's say less than 60 grams of carbs or so for someone who's type two diabetic is probably a good idea when you go pre-diabetic, less than a hundred grams of carbs. And then when you are normal, healthy, somewhere in the range of a hundred to 200 grams higher end, if you're on a more active day, it's typically the carb range.

Caspar ([14:28](#)):

Yeah. And, and going beyond diet, which is incredibly important, let's look at some of the systems and organs of the body because I found this kind of fascinating as well as the brains rolling all of this and why, why it is so important within the idea of insulin resistance, how much it uses of insulin it produces. So can you talk about that, the brain's role in blood sugar optimization?

Dr. James DiNicolantonio ([14:52](#)):

Yeah, it's, what's interesting is everything comes from the mouth. Everything is affected then from the gut, and the gut affects the brain. And so what ends up happening is if you eat any type of inflammatory diet, you do increase intestinal permeability and you then have basically endotoxin or what's called lipopolysaccharide that is now getting into the bloodstream and which is not supposed to happen, that will activate basically the immune system in the brain to release things like tumor necrosis factor alpha and cause inflammation in the brain. And that can lead to basically central insulin, leptin resistance, but also peripheral resistance as well. So it's kind of crazy to think that what you eat affects your gut, which then affects the brain and then that affects the entire body.

Caspar ([15:41](#)):

Yeah, I mean it's all interconnected and even if we move down from the brain just a little bit to the thyroid, you know, talk about how that is so important when we're looking and talking about blood sugar.

Dr. James DiNicolantonio ([15:54](#)):

Yeah, well it's kind of like the, you know, the system that sets your metabolism, like how fast your metabolism is, are you able to burn, you know, the same amount of calories as someone else? Like if someone has low thyroid, they will literally become fatter, consuming the same amount of calories as someone who doesn't. So it's not just about calories, it also comes down to hormones like the thyroid hormones. And the two minerals that are extremely important for thyroid health is iodine and sodium.

Sodium allows iodine to get into the thyroid gland. And in, and magnesium is important for a t p and the pump to do that. So even your micronutrient status will determine your thyroid status, which determines your metabolism, which determines, you know, how well you can handle calories and how, how much your blood sugar might go up from a meal.

Caspar ([16:44](#)):

And what are those foods and things we could take to optimize our thyroid function.

Dr. James DiNicolantonio ([16:51](#)):

So seafood, shellfish are, are good sources of iodine, but also sodium, which is both important for thyroid health. Liver is very important as well for overall micronutrient status. Eggs, like I, there's not a single day that goes by. We're not having probably like three pastured eggs in the morning. So I practice what's basically like more animal-based diet. Most of my calories are coming from, you know, basically eggs, lean meats yogurt, grass-fed yogurt, things like that. And then, you know, is the side dish, so to speak, is the vegetables. Now they're great because they're, you know, you can have a half a plate of vegetables and it's barely any calories, it's super filling, and then the protein in the fats are what give you the long-term satiety. So combining both is really a great way to curb hunger. But if you don't tolerate vegetables, that's okay. It's not like it's super necessary because the nutrients in vegetables are very low bioavailability.

Caspar ([17:54](#)):

Mm-Hmm. <Affirmative> and, and if we move on to something like autoimmune conditions would continue to be on the rise. What's that connection there to diabetes and blood sugar

Dr. James DiNicolantonio ([18:05](#)):

Comes back to the immune system. You have these, you know, basically, you know, t helper cells, you have these other controller cells, and when you start sort of overstimulating the immune system, that's when autoimmunity can start kicking in. That's why you can start seeing diabetes. It's like a type two form, but it's not, it's, it's like a type one form, but it's happening later on like a latent like adult onset diabetes. And so it, it all comes down to the, the inflammatory response from the food damaging your immune system. And now you basically have too much of, you know, one part of the immune system activated not enough of the controller immune system kind of suppressing, you know, the over inflammation. And that's really what triggers autoimmunity.

Caspar ([18:51](#)):

So much of what I am hearing here, it's like it really comes down to what you put in your body and the food. Yeah. And then we've done, like what kind of role does big food play in all of this? And, and should we, do you feel we should have more of a regulatory kind of like we do with banks? I'm not about big regulations, I'm not about big government or anything like that, but you look, this is getting outta hand. Like, you know, kids are, are, you know, seriously obese and diabetes just rampant and it'll continue to go that way. And it seems that big food is the new big tobacco mm-hmm. <Affirmative> and they're targeting children for sure. Right. Do you feel there needs to be more regulations or more oversight into big food and what they're providing, especially since they're targeting children?

Dr. James DiNicolantonio ([19:37](#)):

100%. The, the, the biochemistry that occurs when you consume these refined foods, very similar to drugs of abuse, like amphetamines, like cocaine obviously not to the same degree but just like not everyone who consumes alcohol becomes an alcoholic, right? Not everyone who consumes these processed foods is gonna over consume them, but, but a lot of people do. So, and we can't, we can't know who's going to, you know, consume these foods and then really not be able to control themselves, right? So it's all for profit, it's basically legalized drugs in a way. And you know, I don't know what the best step is. You know, I more, I more stick to the science and not necessarily the, the, the politics of it all, but, you know, we wouldn't have these foods if we didn't have these, you know, corporations. So it's almost like maybe there should be, I mean, taxing them is, is the easiest way to do that, but we know it doesn't always work either, right? So, and, and then you don't wanna deprive people of foods also that, you know, if they, if they're only consuming a 10 to 20% of the time and it's en en enjoyable for them. But I think you're right. I think from a kid, a child standpoint, they can't, they can't determine what's the amount right. Amount of junk food and what's not. So it's almost like, you know, it's really comes down to the parents, but at the same time, how do you, they they definitely shouldn't be targeting children, that's for sure. Yeah,

Caspar ([21:07](#)):

That was gonna be my next question really is, you know, you can't take away all the freedoms of, you know, choosing foods and everything like that and, you know, move into that direction completely. You can educate the parents and, and, you know, go after that because the, the long-term ramifications of feeding children this way are, you know, in incredibly detrimental to health and to longevity and to happiness. So you are a parent yourself. You know, you live a busy lifestyle. Kids live busier and more hectic than ever. You know, eating quickly on the run is something that happens more and more that, that's just today's society. So we can't really change, I think that too much. But what would be your recommendation to a parent listening right now that maybe has a pantry full of, you know, general mills and the Bisco and all the other stuff that's sweet and corn syrup and easy, right? And the child kind of gets happy off of it and doesn't scream when he has a vegetable in front of him. Like what's your advice to, to parents out there who are struggling, who I understand don't have the time sometimes you know, to do it

Dr. James DiNicolantonio ([22:11](#)):

Right, I would say for the majority of your foods, just practice the 80 20 rule. 80% of the time, eat healthy, nutritious foods 80% of the time, of your days exercise well, and 20% of the time have a rust day, 20% of the time have some foods that you enjoy. And if you can maintain that balance, great, lock away those foods that you really have no control over yourself. Right? Like, don't even have them in the house, but the ones that like, you know, you're not gonna just over consume like crazy, but are still going to, you know, give you that satisfaction. Okay. Just make sure you limit your yourself.

Caspar ([22:48](#)):

Yeah, I've noticed that in myself. Listen, I, I usually eat quite clean, but recently my niece had a a, a dry for for Girl scout cookies and you know, I helped her out, bought a bunch. I'm like, oh. Done <laugh> and put 'em in my trunk and have been handing them out to people cause I didn't want 'em, but I brought some in and then, you know, I got a little hungry at night, you know, and I was just like, what's in the pantry? And then you end up eating and they're addictive. I'm sorry. They're very good. And, and that's the thing. It's, if you don't have it, I would've went to sleep slightly, you know, hungry or something, but it's fine. You wake up next day, you're, you're fine. I'm used to intermittent fasting, so if you have it around, you will reach for it.

Caspar ([23:27](#)):

You will go. So one of the best ways I found just don't have it, right. And again, I have, it is, this is my 20% anyway, it's not gonna crush me or suddenly put me on, you know, a downward spiral into just eating girl scout cookies all day long. But I think that that's one of you know, the, the best ways I've noticed of really keeping a cleaner diet is just don't have that stuff around you. You know, outside of diet, what are some of the supplements you would advise people to look at when you're looking at optimizing blood sugar, diabetes? Of course we went over the chromium, the thymine, but are, are there others that, that you'd say, Hey, you should check these out.

Dr. James DiNicolantonio ([24:10](#)):

So there's a, a really cool form of thymine. It's called ayin. It's the form that's found in garlic and it's particularly highly brain and cellular bioavailable. I actually decided to try this on my, myself, my own blood sugar. So I started with a A1C of 5.2 to 5.3. I took 300 milligrams of Ali Thiamin for I think it was about two months, and it dropped my A1C down to 4.8. And so Ali Thiamin Benin, which is another kind of thymine similarity, but it has good cellular penetration as well. Very good for you know, improving blood sugar levels in, in enhancing insulin sensitivity. The key with, and this is another nutrient just like chromium, when I looked at thymine, I looked at the diet, how much we're getting, I looked at how much we need, you know, per what the, you know, government says.

Dr. James DiNicolantonio ([25:01](#)):

I go, wow, there's gonna be very few people that are deficient. But when you start looking at B one, we barely store any vitamin B one store about 30 milligrams. So you can become really depleted very quickly from being sick, just, you know, having a cold from inflammation in the body from exercise even drinking coffee or tea, black tea or green tea close to your foods will inactivate thymine and reduce its absorption. So there's all these factors that really increase one's need for thymine, including a diet high and refined carbs and sugar. So we've known actually giving al nutrition can cause B one deficiency because it's almost like it's based on need. So when you start increasing the need for thymine by having a high carb diet, it's one of those nutrients where it's need just dramatically shoots up and you can actually induce deficiency despite consuming quote unquote enough cuz you're putting added pressure on the body.

Dr. James DiNicolantonio ([26:01](#)):

So it's, it's just one of those key nutrients that sits at the top of glycolysis. There's certain enzymes like trans kease and other enzymes as well. Alpha ketoglutarate in the, in the crub cycle that depend on thymine to basically metabolize glucose so we can make a t p. And it's just one of those amazing nutrients that if you become deficient in, and there's been clinical studies back in 1939, back in 1940 that just a few weeks of eating a low thymine diet will induce pre-diabetic and diabetic glucose curves. But certainly after a couple months.

Caspar ([26:39](#)):

So the idea of intermittent fasting within blood sugar, I mean diabetics should they ever intermittent fast.

Dr. James DiNicolantonio ([26:46](#)):

I think intermittent fasting is fine, also known as time restricted eating. But the, you, you can get yourself into trouble if you're not getting enough micronutrients because you're, let's say only eating



one meal a day and that meal isn't like really optimized well, and you do that for a really, really prolonged period of time. Plus you're active and your nutrient status, you know, is being depleted through sweat and this and that, and then you're only eating once a day. It's hard to really pack in all the nutrients in one meal. So intermittent fasting is a tool but don't overdo it.

Caspar ([27:18](#)):

What are your thoughts on continuous glucose monitoring that you see everyone slapping on the back of their, you know, triceps and promoting these days?

Dr. James DiNicolantonio ([27:26](#)):

Yeah, I mean there's a, it, it's good to get your baseline to tell you, okay, this sour mix in my, in my alcoholic drink just shot my glucose up to 160, right? It's good to like figure out what's really spiking your glucose levels because your insulin's gonna, even though it's not tracking insulin, it's gonna look very similar. So but a, after a while you don't wanna become super hyper focused because a little bit of a glucose spike is fine. That's not a big deal, especially if you're metabolically fed. So you said baseline status, you would get blood work for a baseline, but you're not like gonna be getting your testing your blood work every single day, right. And hyper-focusing on it. So use it as a tool, as a starting point and then, you know, don't, you know, worry about it all the time.

Caspar ([28:11](#)):

Yeah, I like that advice cuz it is true. Too many people get hyper-focused and then lose sight of the big picture, right? Of understanding other elements of it, not just glucose and kind of, you know, only focus on that, only stress on that. And then you stress eat basically. So everything you eat as good as it is, isn't gonna be absorbed. You're gonna be in a sympathetic state, you know that isn't good for digestion and you, you start to not understand the results because it doesn't seem like the food itself is impact is more your response to it. So you get in that you know, disease cycle almost as well just through the stress response of it. So I always ask this at the end with you, what's the next book that's gonna be out in like two weeks?

Dr. James DiNicolantonio ([28:53](#)):

Well probably won't be out that soon. Probably gonna look, look towards doing like a, like a cookbook and then may do something on hydration. I've really wanted to do like an in depth on the salt fix was mostly salt wasn't really, I mean, it was a little bit hydration, but I wanna do something more on water and, but, but that's gonna take me years to do

Caspar ([29:12](#)):

So. Oh yeah, years. Oh, that's, that's the first I've heard you say it's gonna take years because you're popping out books like every other month. So, but I think that's a fascinating one. Listen, the cookbook, everyone does love. I just had Candace kama'i the, the cook on yesterday and she like branched out into more spirituality and everyone's like, just go back to the cooking stuff and everything. It's like, but that was good too. I love the spirituality stuff, but everyone loves a good cookbook, so I'd love to see you put on the cooking hat and you know, and show us what's the best way to eat your SNAs. So Doc, always great to see you. Thank you so much for everything you do. Can't wait for the next book and yeah, keep, keep knocking 'em out. Thanks

Dr. James DiNicolantonio ([29:54](#)):

For having me on.

Caspar ([29:55](#)):

Optimizing blood sugar levels and insulin sensitivity is key for a long and healthy life. Check out Dr. D Nickel Antonio's book *The Blood Sugar Fix* and take the necessary actions to ensure you don't become a statistic in the growing diabetes epidemic. Until next time, continue writing your own healing story.