

VIDEO_ Diet Doctor Podcast with Amy Berger (Episode 28)

Dr. Bret Scher: Welcome back to the Diet Doctor podcast with Dr. Bret Scher. Today, I am joined by Amy Berger. Now, you may know Amy Berger from either her blog or her YouTube channel. She puts out a ton of information at tuitnutrition.com, she's also very active on Twitter @tuitnutrition.

Amy has a Master's in human nutrition and she's a certified nutrition specialist and she came to low-carb on her own first, and then became certified in nutrition, and she has a wonderful way of explaining things and ways to make it easy and ways to make it that we can all understand.

Her YouTube series is Keto Without the Crazy and I think that really summarizes a lot of her message, that we don't have to get so caught up in things, we can make this more simple and still be effective. She also wrote the Alzheimer's Antidote, talking about Alzheimer's as sort of type three diabetes as a glucose and insulin issue that can be addressed with low-carb.

So, we talk about that, we talk about weight loss, we talk about a lot of the psychological sides of things, because it's not just about what you eat, it's also about who you are, how you approach this, what your mindset is, what your background is, and we have to factor those in, and I really appreciate Amy's attention to this.

So, I hope you enjoy this episode with Amy Berger, please check us out on DietDoctor.com to see the whole transcripts, all our other podcasts and all the other information with the guides and the recipes, and there's a wealth of information on DietDoctor.com. Enjoy this episode with Amy Berger. Amy Berger, thanks so much for joining me on the Diet Doctor podcast.

Amy Berger: Yeah, thanks for having me.

Bret: Now, for people who are sort of new I guess to the low-carb space, maybe they don't know you, but you have quite a presence. First with your book the Alzheimer's Antidote, then with your blog @tuitnutrition.com, and now with your very popular and very entertaining YouTube channel, so you have been quite prolific in this field. But you're no stranger to it, you're no newbie to it. You started the low-carb journey over 15 years ago it sounds like, so tell us a little bit about what got you involved in low-carb.

Amy: Well, like so many people, I came into low-carb because I was heavier, and I wanted to lose weight. And I had kind of been on the heavy side my whole life. I wasn't, you know, obese

but I was heavy, and I was especially heavy compared to the amount of exercise I was doing and what I thought was following a healthy diet.

You know, I'd actually completed two marathons and I was dutifully eating my wholegrain bread with my light margarine and putting skim milk on my wholegrain cereal, and no matter how hard I worked, no matter how many hours I exercised, the weight would not budge.

And I'm fortunate in that I didn't have any major health issues, well, that I knew of anyway. All that I really had was some excess weight, but I have a family history of type 2 diabetes, cancer, stroke and obesity, so the deck was kind of stacked against me. And I have no doubt that if I hadn't found low-carb when I did, right now I'd probably have morbid obesity, I'd probably have PCOS, I might have type 2 diabetes. So, it was my senior year of college actually that I read the Atkins book, that's how I got started.

My mother got a copy of it at a yard sale and she never read it, but I did, and it was so different. But I said, you know, I've tried so many different things and nothing is working, what do I have to lose, I'll try this. And it made sense too. Like the way that Dr. Atkins wrote it, it made sense to me why this should work. And maybe because I was so young, I wasn't really concerned about well, what about my heart health, what about this, and I was so desperate, I just want to lose weight, I'll do anything.

And of course, it worked, and I have no problem admitting it didn't stick the first time. I was maybe too young, and I wasn't really ready make it my life, and the way I was going to eat for the rest of my life so I stopped and started a number of times. But it was only a few years after that that I stuck with it for the long term and that's how I got into it. And I'm a career changer, so to speak; I wasn't always a nutritionist.

You know after being in and out of a lot of jobs that I didn't enjoy, and I wasn't fulfilled by. I said, you know, I love low-carb, I love learning about it, I love eating this way, I love cooking this way. Like, nutritionist is a job, maybe I could do that, maybe I could help other people with this. So, I went back for formal, you know, education in nutrition and now, here I am.

Bret: So, that's what so fascinating. You were low-carb first and then went to your formal education about nutrition, which was probably anti-low-carb and all count your calories, all low fat. So, when you were going through your training, what was it like for you? Was it sort of like oh, maybe I'm wrong and they're right, or was it I just need to sort of ignore what they're saying to get through this because I know what works... What was your mindset then?

Amy: That's a good question. I actually chose the program I chose because I knew it wouldn't quite be a 100% mainstream. I went to a university that has one of the five accredited naturopathic medical colleges/universities in the US. And it was... I went to nutrition school but just the fact that they had a naturopathic medicine presence there, you know, told me, maybe they'll be open to something a little different.

And I think it worked to my advantage. So, they were not mainstream, they certainly were not teaching keto, they weren't teaching low-carb, they weren't teaching paleo, but they (the professors) were very, very aware that most people were eating too much carbohydrate, most people were eating especially too much refined sugar. Most of them were kind of on board with the yeah, saturated fat isn't that bad for you.

But for me, I felt like for me personally, anyway, I had an advantage going to school for nutrition after learning a lot about it on my own, because I was able to learn the biochem and the anatomy and the physiology in the context of low-carb. So, we would learn about a certain pathway or a certain system in the body and I would say, "that's why low-carb does what it does, that's why insulin does this."

So, it kind of reinforced what I already knew and then of course, deep in my understanding, but what is so funny to me is that I had classmates that were vegetarians and vegans and we could learn the exact same science and come away with such different interpretations of it.

Bret: Yeah, isn't that amazing?

Amy: Yeah.

Bret: So it definitely was to your advantage to have that experience beforehand, you learned so much more and so much deeper.

Amy: I think so.

Bret: And I think it's interesting that you said you can admit that it didn't stick the first time, almost like sheepishly. Like, you know, you're not perfect. And that's such a big part of your message, we're not perfect, we don't have to be perfect, we start and stop. So, I think that experience really helped you now help your clients. So, tell us some of the challenges you see when you're getting people started on a low-carb diet. So people out there can sort of say, yeah, you know I experienced this, I know I'm not alone, this is how I can get over it. What are some of the things that prevent people from sticking with a low-carb diet?

Amy: Oh man, where to start? One of the... one of the big things is-- and this is something that I should have said earlier-- when I was new, very late 90s, early 2000s, there was so much less information about low-carb and keto. But because there was less information, there was less misinformation, there was less confusion, there were fewer conflicting messages.

I've always said I don't envy the people that are new now, because when I started there were literally two books. There was the Atkins book and there was Protein Power, you know, by Mike and Mary Eades. There might have been Schwarzbein principle, there were, smaller, lesser known books. There was one forum; when I was new to this, Facebook did not exist. Reddit, Twitter, Instagram did not exist, so there was none of this.

You just read the Atkins book, you followed the plan as written, and it was great. Maybe you had to tweak it a little bit for yourself, you know, for individuals, but that was a really good starting point for most people. One of the biggest challenges I see now with people is that they are so overwhelmed, not just by conflicting messages but by information in general. Well, what about fasting and MCT oil and exogenous ketones and do I have to do this, and what about--?

Let's just start with keeping the carbs really, really low... let's do that first. You know, it's... they're so overwhelmed and I don't know, somebody must be making money off of trying to make it complicated, trying to make you need products, you need to weigh and measure everything, you need to track.

You know, how is it that Atkins wrote his first book over 40 years ago before the Internet even existed, and people did fine? They didn't have to track, they didn't have to have an app to tell them when to eat or when to stop eating or how much to eat.

Bret: They weren't testing ketones; they weren't tracking everything they ate.

Amy: Yeah, that's one of the bigger things I see now. And you know, there's just the typical stuff that it's hard to change your diet. Especially we live in such a carb-centric culture. Carbs are everywhere and they're cheap. You know, like I just flew here to Salt Lake city and you can have keto options at the airport. They sell cheese, they sell hard-boiled eggs, they sell beef jerky. It's 10 times as expensive as the cookies and donuts, which aren't cheap at the airport to begin with. But part of it, you know, a lot of it is the psychology.

Well, I travel, so keto is hard for me or you know, my life is this so keto is hard. And keto is not hard at all in any of those situations, I think people just need a little bit of education as to how to do it. It's really easy when you know what to do. It might mean cooking in advance and taking food with you, knowing what to order in a restaurant if you're on the road. It's very simple, it's just so different from what people are used to.

Bret: And thus your series that you're doing; Keto Without the Crazy. I love that name. I love that name, because people can get a little crazy and yes, there's a place for tracking your macros and tracking everything you eat, and yes, there's a place for checking your ketones. But then there's also a place of saying, let's make this more simplistic. So, how... what are some other tips you use to help people just make this simpler?

Amy: Yeah, I don't want to totally badmouth the tracking because there is a place for that, you know. Especially if you think you're doing everything right and you're not getting the results that you want, maybe you're not quite where you thought you were. Maybe you're eating 100 more g of carbs than you thought or whatever.

So, those things can be helpful but when people are brand new, I think it's... It can be prohibitively complicated. So, you know, in terms of keeping it simple, I really try to just remind

people that the single most important and most powerful, most effective aspect of this way of eating is controlling the carbs because of controlling insulin. Everything else is kind of not secondary in that it doesn't matter, but what gets you the biggest bang for your buck really is keeping the carbs low.

Over time, once you've adjusted to fat burning, then maybe you'll want to look at the sources of fat, whether it's animal fats and saturated fat versus the vegetable and seed oils, figuring out maybe you have a sensitivity to dairy or something else that you didn't realize and maybe that's affecting you in some way. But keeping it simple is really just about the total carbs that you're eating. And you know, unfortunately for a lot of people, that means that, if you're really having a hard time with fat loss-- and of course not everybody uses keto for fat loss, I mean, we use this for so many other applications-- but a lot of the really delicious sort of treats are kind of off limits.

Not that they can't work, but some people get into trouble with that and I think keeping it simple is meat and vegetables. Maybe some nuts, maybe some cheese. But all this other... you know, I look at these keto cookbooks and they're delicious and we're so lucky to have these creative food bloggers, but I think some people can get into trouble with the keto muffins and keto brownies.

Bret: Let's talk about that. There's so many keto products on the market right now, keto cookies, and trying to replace the things that we had to "give up" and the fat bombs and the bulletproof coffees and you know, the keto desserts. When someone gets started, that's what they're looking for. They want to replace all these things. And I don't know, but that sounds more dangerous than helpful and I think you might agree with that in many situations. **Amy:** Yeah, I think for some people, it's a really good bridge, it's a really good way to get you over the hump, you know, get yourself adjusted.

But I think in some people it perpetuates the desire for something sweet, even if it's fake sweet or, you know, with sugar. And I'm not against these products, I think they really do have a place. If having a keto brownie or a keto cookie is going to mean the difference in someone sticking to keto in general versus not, then have it. By all means, do it.

But I also think, something that we don't talk about enough in this community is food addiction and binge-eating and really serious psychological and physical problems with food that people have. And I think it doesn't really do you any good to replace a sugar binge addiction with an erythritol binge addiction or, you know, for a lot of people, going keto reverses that.

They find the sugar cravings are gone, the desire to binge is gone, because keto just regulates appetite so well. And there's been people who say for the first time in my life I'm not hungry, for the first time in my life I can go from one meal to the next without fantasizing about food or what my next meal's going to be. But that doesn't happen for everybody, and I think these sorts

of products feed into that. For some people, like I think really you just have to find out how you're wired because some people can do fine with them and some people cannot.

Bret: And that's the common phrase we hear in the low-carb world; just eat when you're hungry and stop when you're not. And for a lot of people that works, but you can imagine for the people who that doesn't work for. You almost feel like you're sort of being ostracized, or like you're not doing it right or something's wrong. But like you said, food addiction doesn't automatically go away in everybody. So, some people can't adhere to the eat when you're hungry principle.

Amy: I think it's so easy to say that and it's so difficult to do. "Oh, just eat when I'm hungry and stop when I'm satisfied, oh okay." There's a comedian, I won't say his name because he's a little controversial, but he said something to the effect of "my meal isn't over when I'm full, my meal isn't over until I hate myself." And it's so many of us, right? We don't stop eating until like physical pain is the sign for us to stop. "Oh, I guess I'm stuffed now."

So, it's very difficult and people should just know, if you are out there listening to this and you are struggling with this, you're not the only one. We don't talk about it a lot, but you are not alone. And one thing I totally forgot to say that I should have with keeping it simple is the math. I try - just kind of going to another topic, I try not to get people away from the math. You'd be amazed, or maybe not, with how many emails I get with people saying, "I'm having trouble hitting my fat macro.", or "what should my macros be?". I don't think in the Atkins book, I don't think the word "macro" appears at all in that book.

I could be wrong, I haven't read it in a few years, but people think they have to add fat to things in order to achieve some ratio that's going to magically help the weight fall off or get rid of their migraines or bring their blood sugar down. They're afraid of protein and so they only eat a certain amount and then they eat more fat to make up for that because they're still hungry.

The human body is not a calculator. You know, it doesn't... It would be so easy if it was, but the human body is not binary like ones and zeros like that. So, I try to get people away from the math and thinking more about eating with controlling insulin in mind. It's not really about the numbers and the ratios and the percentages, it's about keeping insulin low as much of the time as you can.

Bret: And that starts with lowering the carbs. And also, maybe spacing out when you're eating. So do you also try and talk about time-restricted eating and not having six meals a day or trying to get 12 to 18 hours between your meals or whatever the case may be? Or do you find that complicates things too sometime?

Amy: When people are brand new, I don't really like to talk about, you know, like the phrase "intermittent fasting" because if you eat one meal a day, let alone two, that's not fasting. So, I like, I prefer time-restricted eating or time-restricted feeding, so intermittent fasting is faster to

say. But I don't really talk to them much about that at first. At first, I don't want them to count anything, I don't want them to think about anything except keeping carbs really low. And even then, they can have as much fat as they want, as much anything as they want as long as it's a keto-friendly type food.

Over time, I think in a lot of people, skipping meals happens naturally because most of us find that you're just not as hungry, and you can easily go without a meal or even two meals. I don't think we really should focus so much on a number of hours. Like, "oh, it's not 8:00 yet, I'm not allowed to eat." If you're hungry, eat, but if you're just craving sugar, you're just craving sugar, maybe tough that out before you're hungry for a real meal. But I think meal frequency definitely has a role. Even on a ketogenic or low-carb diet, what's going to get you the biggest bang for your buck, is just the very low-carb intake.

But if you're someone who is exquisitely sensitive to any food, and your insulin is going to rise a little bit because protein affects insulin. It's doesn't spike it like carbs do, but it affects it a little bit. And so even if you're eating low-carb foods, if you're eating them, you know, six eight times a day and doing this to insulin all day long, that's still kind of a problem. I hate to be wishy-washy but people really differ; there are some people who seem to do better with snacking.

One ounce of nuts here and there, maybe a little piece of cheese later, then a meal. Some people don't, so I think some people... I think there's definitely a place for the time-restricted eating, but I also don't want people to think they're doing it wrong if they don't fast.

Bret: Good point, yeah. And you brought up something very important there; are you hungry or are you craving sugar? And for most people getting started, they can't tell the difference because most people haven't really tried to tell the difference, whether you're hungry or it's sugar or you're snacking, whatever, you just snack.

When you're changing, part of it has to become more in tune with your body, which I would guess is difficult for a lot of people in the beginning because they've never really thought of it before.

Amy: Yeah, no, that's a good point. For me, the way I determine for myself am I hungry or am I just snacky or do I just want sugar... Is I just ask myself, "am I hungry enough for a pork chop? Am I hungry enough for steak and asparagus?" And if the answer is yes, I am hungry. If the answer is no, I don't want a pork chop and broccoli, but I'd kill for a donut, then I have my answer.

And often too, sometimes if I feel a little snacky, I say... so the beauty of low-carb for most people... Again, the magic doesn't seem to happen for everybody but for most people, when you start to get a little hungry, you can wait. You say, "I am hungry, but I could wait another hour if I had to." I don't have to quell that hunger right now, so I tell myself wait another hour or wait

until you're hungry enough for a meal. Instead of having that snack in that moment, wait until you're truly hungry and you can have a full piece of fat, protein and vegetables or whatever.

But you're right, it's so hard, we're not used to... We live in a snacking culture, I used to work in a busy office where everyone had a candy dish on their desk and you go to the shoe store and you can buy candy at the checkout, you go to the electronic store and there's candy, so it's crazy. So, it's hard not to snack sometimes, but that hunger... It's hard to tell when you're really hungry.

Bret: That's a great paradigm though, because even with keto, even with low-carb, you know, snacking on nuts, snacking on macadamia nuts, snacking on maybe some nut butter or something. If you're not hungry enough for a meal, it's probably more of a psychological need than a physical need. And it's not all about the food, it's a lot about the brain and a lot about understanding your body and working through these things.

Now, you've mentioned insulin a few times, which is obviously a very important hormone in our body. And you have a nine-part series on insulin, so you've done some deep dives on insulin. What are some of the basics? Insulin obviously regulates our blood sugar and the higher our blood sugar goes, the more carbs we ingest, the more our pancreas secretes insulin to regulate the blood sugar. Insulin is also said to restrict breaking down our fat stores, so we need low insulin to be able to mobilize our fat stores.

So, those are sort of like the basics of insulin in terms of eating in low-carb. What are some of the surprising things, or maybe the contrary things, that you've learned about insulin that you include in this nine-part series that you think is helpful for people?

Amy: Yeah... oh man, where to start? Because I think insulin... There's so much focus on blood glucose at least in the mainstream medical world, in the mainstream nutritional world, so much focus on the blood sugar. And we're missing the boat by not realizing quite literally that millions of people have a totally normal fasting glucose and a totally normal A1c, but those things are only normal because they're being kept in check by sky-high insulin.

And there's a lot of medical issues that are driven by the chronically high insulin regardless of the level of the blood sugar. So, type 2 diabetes is only diagnosed once your blood sugar is elevated, but the insulin in many cases is elevated for years before the blood sugar starts to rise to that level. But I'm giving my talk about Alzheimer's later today. Alzheimer's is a disease that's linked to chronic hyperinsulinemia.

Hypertension in most people has very little to do with the amount of salt they're consuming and everything to do with insulin. Gout is not really about the red meat, it's really more about the insulin and the fructose. Cancer is very controversial. But you know, insulin is... In the learning that I've done, what strikes me the most about insulin is that regulating blood sugar to me at

this point is the least important, least critical thing insulin does, because the body has a lot of different ways to regulate blood sugar even without insulin.

I know type 1 diabetes is like a serious situation that we're not going to get into right now, but even without insulin, the body has other mechanisms to deal with blood sugar in various ways. Insulin is more like a storage hormone. Insulin tells your body that times are good. Times are good, we better store a lot of this energy, times are good, we can grow now. We can... it's a growth promoter, right? It's helpful for building muscle mass, it's not... you don't even need a ton of it.

The body builders even inject insulin, I can't even imagine doing that. You know, sort of abhorrent un-checked growth... Tissue growth is tied to chronically high insulin, whether that's skin tags, what we're finding out now. I had a doctor friend who says insulin is like miracle growth factor for your fat cells. And even PCOS, polycystic ovarian syndrome, but what makes the cyst grow? Insulin.

Benign prostate hypertrophy, the enlarged prostate gland, all of this is tied to insulin, and with regard to cancer, you know, we don't know what causes cancer. There are a million different things that are potentially carcinogenic, but I would not even say that chronically high insulin or blood glucose causes cancer, but what the research seems to indicate is that those things, the chronically high blood glucose and insulin, sort of roll out the red carpet for quicker growth.

Bret: A better environment for growth.

Amy: Yeah, when there's a cancer already there high insulin and glucose give it a stimulus and fuel to grow and spread.

Bret: Yeah, so many functions besides just blood glucose. Now, could there be a problem with having too low insulin for too long a period of time?

Amy: Yeah, I kind of do, and that might be a little controversial, but the dose is in the poison-- the poison is in the dose, just like they. Like too much oxygen can kill you, too much water can kill you, too much of anything can kill you... We don't want no insulin. What we don't want is high insulin all the time. There may be benefits to punctuated elevations in insulin every now and then whether that's somebody who carb-cycles.

Maybe they introduce periodic carb-feeding. Not everybody needs to live in super-duper ketosis, you know. Some people can be on what I would call more of a low-carb diet, but your insulin is not going to be on the floor the whole time but it's not going to be through the roof either.

Bret: Especially for like teenagers or athletes or people trying to build muscle mass, growth spurts those types of things.

Amy: Yeah, and even the... Those punctuated insulin bursts, that's not the problem. The problem is when we have high insulin all the time and our bodies never get into that sort of fat burning low inflammation state. So, I couldn't tell you what necessarily the risks are of-- type 1 diabetes aside like what the risks are of too little insulin. But I don't think... I'm not afraid of insulin, I'm afraid of chronically high insulin.

Bret: Makes sense.

Amy: Just like cortisol, we need cortisol to live, you don't want cortisol high all the time. **Bret:** Great analogy. So, then there's this term "insulin resistance" and this is a term we hear all the time. And sometimes it's not differentiated from hyperinsulinemia, right, so insulin resistance just means our cells aren't listening to the insulin as well, whereas hyperinsulinemia means the insulin levels are high. You seem to want to differentiate between those two a lot and say insulin resistance isn't a useful term. Help us just understand the difference there.

Amy: Yeah, it's okay to use the phrase just because that's what everybody uses and that's what we know. But I think because most people do use them interchangeably, so when we say insulin resistance, we kind of know that we're talking about chronically high insulin. For me though, hyperinsulinemia, or chronic hyperinsulinemia, the definition is built into the very phrase. Chronic means all the time or often, hyper...High, emia... in the blood. Your blood levels are too high too often.

What does insulin resistance mean? Because insulin resistance to me, implies the cells are resistant so they're not listening to insulin, they are not responding the normal way they would to the signal of insulin. But I could be wrong, I'm willing to be wrong about this. My thought process is that if the cells were resistant, you wouldn't have hypertension because your kidneys wouldn't be retaining sodium, you wouldn't have gout because your body wouldn't be retaining uric acid.

You would be losing weight because insulin wouldn't be giving your adipose tissue the signal to store and hold on. But I also know that supposedly anyway, different tissues can exhibit different levels of resistance to insulin, so maybe it's like, well, my fat tissue sure is still sensitive, but my pancreas isn't, or my liver isn't. But yeah, insulin resistance... are the cells resistant to insulin or are they just full?

Because we don't really have time to get into the whole fat threshold concept, but there's a theory where various cells are so full of fat already, whether it's your fat, tissue or your muscles or even cells in your liver and pancreas, they're so engorged with fat already, that they physically can't respond to insulin in the right way because the insulin receptor and even the glucose transporters literally can't move through the cell because it's so full of fat. So, they can't go to the cell membrane properly, they can't receive insulin properly. But is the cell resistant or is it just full?

Bret: Just full, yeah.

Amy: It's not broken. I think Jason Fung had an analogy where you're stuffing a suitcase getting ready to go on a trip. Well, at some point that suitcase is full, and it's overstuffed and you can barely buckle it right, you got to jump on it, try to close it. There's nothing wrong with the suitcase, it's not broken, it's just stuffed, the capacity is full.

Bret: Yeah, so, whatever that process is that drives the hyperinsulinemia, so it's the hyperinsulinemia that then causes the problems with the insulin resistance or the full cell being the instigating factor basically.

Amy: That's what I think. I think there's some people that disagree or maybe it's not even 100% settled whether it's the chronically high insulin that causes the resistance or cells become resistant thus, forcing you to secrete more insulin.

Bret: Yeah, but the treatment remains the same.

Amy: Exactly, that's the beauty of it. Honestly, it's great to try to figure out the mechanisms, but we don't need to know the mechanisms; We don't need to know. Dr. Atkins wasn't the first person to prescribe low-carb diet for weight loss. People were doing this back in the 50s and 60s, the 1800s, you know. Banting's letter on corpulence, you know. We didn't have to know any of this to know that getting rid of stores helped a lot of people lose a lot of weight.

Bret: Isn't that fascinating? Now, the more we know, the more science we have, the more confusing it's become. It was so much simpler back then without knowing the science and I'm a science guy, I like knowing the science, but it can be so confusing because you have a rat study where you overfeed rats with fat and they develop diabetes and all of a sudden you see these headlines like fat causes diabetes, and it's like oh my God... What does this mean? So the more we try to learn about mechanism, sometimes the more confusing it gets.

Amy: Yeah.

Bret: And so we talk a lot about weight loss, but also mental health is a big thing. And you've been very vocal about low-carb and keto and mental health. So, that's something that you have had experience with and something you experienced with your clients. I guess, did it surprise you that there was such a strong connection there, and is it something you find in a lot of people?

Amy: Yeah, it doesn't surprise me, but I wish more people knew. And I think keto is not 100% slam dunk for mental health, you know. Some things are either not going to get better or only improve to a certain extent, but it's amazing how many people do improve so much on keto, whether it's depression or anxiety or bipolar schizophrenia. There is actually published literature on a lot of this.

Depression, there's not as much on depression, there's a lot on bipolar anxiety and schizophrenia, but it makes sense to me because a lot of these things may have something to do with depressed brain glucose metabolism or just depressed brain energy metabolism in general. And so when you're getting ketones all of a sudden, the brain kind of comes back to life and I mean that's not the only mechanism.

I've given a talk where there's at least five or six different mechanisms where a ketogenic diet can help, but I think it's especially important to get this information out to the psychiatry community and the psychology community because so many of the pharmaceutical drugs available either don't work or they work but they come with such, you know, horrible side effects that some people would rather be sick than deal with the side effects. Or you could just change your food, you know.

Or change your food and maybe reduce your medication. Maybe you won't be able to stop it completely but it's astounding to me that-- you know, I actually heard Jeff Volek say the other day, it's such a great line, because when you start to say, keto, we know it's a slam dunk for epilepsy, we know it's a slam dunk for type two diabetes, fat loss, you know.

It seems to be really good for hypertension, metabolic syndrome in general. And now we're learning about migraines and like I said, anxiety, like I said, all this stuff, you start to sound like a snake oil salesman. Have you tried keto? And even like glycogen storage diseases, all these weird rare conditions, people with Ehlers-Danlos, a collagen disease, have been getting better with keto. All this stuff. You really start to sound like a cook... You have this weird thing? Try keto.

Bret: Try keto.

Amy: And Jeff Volek said, when all you have is a hammer, everything looks like a nail, keto's a really big hammer and there's a lot of little nails out there.

Bret: It just shows that maybe some of it has to do with un-doing the damage we've done with all the carbohydrates that maybe it's not the ketones, maybe it's just getting rid of the junk we've been doing or maybe it is something--

Amy: Yeah, I think a lot of what we consider anxiety or panic attacks or rage, or road rage especially, is hypoglycemia, because I've felt it, we've all felt it. Even since going keto, every now and then, you still have that moment in the car. But I think that's just the wild ups and downs in blood sugar, and when you even it out, guess what? The mood is stabilized too.

That kind of irritability goes away. Not always, you'll still be in a situation every now and then when you get heated, but even in depression, there is some evidence that different types of fats can affect the brain and moods, especially Omega-3's. I think there's a lot that we don't know,

but again, the beauty is we don't have to have all the answers... We don't have to know why it works to know that it works because it's worth trying.

Bret: You mentioned the problem with antidepressants. There was this... I forget the details but there was this journalist who travelled the world for a couple years, researching depression and antidepressants in different communities and different cultures. And he went to one and they said, oh, we gave someone an antidepressant and it helped them, and he said, "what was the drug?". "Oh, no. It wasn't a drug, we gave him a community connection." That's what they termed their antidepressant in their language.

One person, they gave him a cow and he started a business and he started to gain income through that cow and that was his antidepressant because it made him feel better. So, it's so funny to think of how we think about you're depressed. It's a chemical disorder, here's your drug, as opposed to thinking more about your lifestyle, your community, your sleep, and of course, your nutrition and how you're feeling in your brain.

Amy: I think all of that feeds into it. But my own personal experience, I think depression is sometimes situational, sometimes it biochemical, sometimes it's both. You know, situational meaning if you are trapped in a job you don't like, maybe you're in a loveless marriage, or you're even living in a town you don't like, and you just don't feel fulfilled by your life, even the grief or the death of a loved one or divorce or something. And then there's biochemical where if you look at your life, everything's great, what am I so unhappy about?

And I had a little bit of both, but I also had a very bad thyroid problem and as soon as I got on thyroid medication, my depression got about 90% better. It's not gone but it's so much better. And I knew it was thyroid-related. It was just a a sort of tightrope walk dance to figure out the type of medication I needed and the dose that would make me feel better. And I see that all the time in clients. Either unrecognized hyperthyroidism or they know they have it and they're not on the correct medication or dose because they still feel terrible.

All their same signs and symptoms are there. And unfortunately, I'm not a physician. All I can do is educate them and recommend, talk to your doctor about this because I can't prescribe the medication or change the medication. But I can give them information, hey this is why you still feel lousy.

Bret: It's amazing how controversial thyroid is, because TSH is the common test, the thyroid stimulating hormone and there's a wide range, you know, like in the one to four range. And if you're in that range, frequently people won't test anymore, but testing things like 3T4 and 3T3 can add extra information, but even then, it's still controversial in terms of what is true hypothyroidism and there is sub-clinical hypothyroidism.

And you know, I have a friend who runs this website Hormones Demystified and he is big on thyroid and sort of the trouble we can get into by digging deeper and assigning problems to

thyroid that aren't. But there's definitely a balance there where I think we're missing a lot. I think there's a lot of over treatment, but we're also missing a lot. My one question is how does keto affect thyroid? Because that's something that most people talk about in this setting and...

Amy: Yeah, that's a great question because it is controversial, and we could have a whole hour podcast on thyroid stuff alone, but I'll skip some of what you said before and I'll just go with this. Some people who have hypothyroidism-- and it seems to be specifically more in the Hashimoto's, which is an autoimmune thyroid condition.

That seems to get better for a lot of people on keto. They go keto and they're able to reduce or stop their meds; they get a lot better. Not everyone does, well, I don't have Hashi's but I still need my medication. In some people-- not everyone but some-- it seems to be that keto lowers T3 and T3 is the most active, most potent thyroid hormone, there's a lot of different thyroid hormones, T3 is kind of the most powerful one.

The thing is that we don't know if this is good, better or different. Stephen Phinney has sort of hypothesized that keto makes the body more metabolically efficient that you need less T3. Your body is more sensitive to kind of like insulin, and when you're more sensitive to it, you don't need as much to generate the same effect. So, I don't know if that's proven, I think that's a hypothesis.

Bret: Yeah, same hypothesis for testosterone as well.

Amy: Yeah, and my thinking is I don't really care what the T3 is as long as somebody feels well. If you're asymptomatic, if your T3 has gone down but you still feel great, still have energy, you're losing weight you're happy with, does it matter? So, I think if you can keep an eye on it but if you feel okay, I don't think it matters. And one thing though, there is a lot of people have a thyroid decrease after losing a substantial amount of weight, especially if they've done it through dramatic calorie restriction.

And that's not unique to keto though. That'll happen on any diet where you lose a lot of weight especially if it's through a big caloric restriction. Where I see some people getting into trouble on keto with this situation, and it's usually women, almost always women, honestly think there are some people that are over-exercising and underrating and that's the problem. Keto is not the problem. The problem is that they are inadvertently starving themselves and taxing their bodies way too much.

And it's not really keto, it's the fact that they weren't eating enough. And some of those people really do better increasing their starch, and that's fine because most of those people are young, lean and already fit and probably didn't need strict keto in the first place. You'll never really hear this from a woman who started at 350 pounds. This tends to happen to people that are already near their goal weight.

Bret: And if they're exercising that much, they will have more problems burning the carbs efficiently for fuel. And also being able to burn fat from fuel.

Amy: So, I just think they need to eat more food, whether it's more carbs. And the thing is, a young woman like that, culturally she's just not going to sit down to a 16-ounce steak. A man will do it, that's why we don't hear these problems in men.

A young girl is not going to do that, and so they might increase their calories if it's a total energy issue, they might be more comfortable psychologically getting those calories from sweet potatoes or beans. I'm not saying that's the best way to do it, but that's effective because that's what they'll eat, more so than just having more food that's fatty or fatty salami, they're just not going to eat that way.

Bret: Right, such a good point. Just the cultural paradigms, I mean you go online and look up what keto is and you see bacon this and big steaks and you're right, a 16-year-old girl is going to look at that and say, are you kidding me, I'm not eating that.

Amy: It's crazy, yeah.

Bret: So, you have to meet them where they are and work with them there. So we went from the brain to the thyroid. I want to go back to the brain, because obviously with your book, the Alzheimer's Antidote, really put you on the map as an expert in Alzheimer's disease and nutrition and this concept of type 3 diabetes.

And when I was in med school, Alzheimer's was all about the plaques and the tangles and once you had it, you had it, there wasn't anything you could do to prevent it, so you didn't even want to know if you were at risk for it because there was nothing you could do. Now, the paradigm is changing. So, tell us a little bit about how that paradigm has changed and what you think the main interventions are?

Amy: Yeah, I think, unfortunately, it is still about the plaques and tangles at least in the mainstream Alzheimer's and neurology world. It's changing very, very slowly. There is more research coming out, saying look, this amyloid thing is wrong because there's been at least four pharmaceutical drug failures now of anti-amyloid drugs that have had zero-- they've either had no impact on the disease or they've actually made it worse.

Bret: Yeah, and there've been billion-dollar drug investigations.

Amy: Yeah, one of the companies, I forget which one, they're waving the white flag, they've given up, they're not even going to try anymore. And I think this type 3 diabetes phrase is so telling. And it's all over the medical literature. And unfortunately, the people who need this information the most are not getting it. The patients and their loved ones and caregivers are never hearing that Alzheimer's is a brain fuel problem.

It's a shortage of energy in the brain, so these neurons are atrophying, they're withering, they're shrinking, but I wouldn't even say controversial, it's not even known at all I think in the conventional neurology world, that we know as much about this as we do, or that there are these potential solutions.

And I'm so-- I was an English major in undergrad-- I'm so careful with the way I say and write things. I use the word 'potential' because we don't know for sure if you can prevent Alzheimer's or if you can prevent-- Well, there are some small scale studies showing that you can reverse it in its early stages, you know. Someone who's very, very afflicted, it's going to be a lot harder to have an impact on them, but I think it is reversible the earlier you catch it and the more mild it is. And I think we can prevent it, but I can't say for sure, I wish I could.

Bret: The concept is there is plenty of glucose in the system. The brain has all the glucose it needs, it just can't use it efficiently, so sort of like an insulin resistance of the brain in a way. But again, there's that term. So, is there an easier way for people to describe it for people to understand the mechanism a little more?

Amy: Yeah, you know that phrase "water, water, everywhere, not a drop to drink"? That's kind of how this is, you're exactly right. There's more than enough glucose in the body; Why isn't the brain using it? And at first it is. There's a researcher, Stephen Cunnane, whose work is really phenomenal in this area of ketones for the brain. And you know, he was saying, is the problem with the supply or demand?

Is there not enough glucose getting to the brain? Is the problem with the supply, or is the brain not using it? Is it the demand? And it's both but at first, it's the demand because the brain, for whatever reason, becomes unable to metabolize the glucose. There's plenty of glucose getting into the brain; The brain's just not using it. Then it becomes a supply problem because if the brain's not using it, the body stops sending it. Like, if you're not going to use it, I won't even give you any.

So, in the later stages, the brain doesn't even take the glucose up in the first place. And in my talk I sort of speculate some of the reasons why I think this is happening, it could be just like the rest of the body where the glucose is just not going to be used properly, it's just going to linger in the blood stream. Maybe it lingers in the blood interstitial space and doesn't even get into the cells. I think part of it too is-- not to get too geeky-- the metabolism of glucose, the actual burning of glucose in mitochondria is more damaging than burning fats, more damaging than burning ketones.

It's like the single most damaging thing in the body is the running of the electron transport chain. You generate these free radicals, blah, blah, blah. And because glucose is so much more damaging than most of those other fuels, and most of us have been burning almost nothing but glucose for our whole...

Well predominantly glucose for most of our lives, these cells are already so highly damaged, and the brain doesn't have the same repair capacity that a lot of the rest of the body has. And I think if I anthropomorphize and try to put human ideas into these neurons, they're saying, "I'm already so damaged, I'm already so debilitated from all these years of glucose toxicity that I'm not going to let you give me any more glucose; I'm going to shut this spigot off, I'm not going to take any up, I'm not going to metabolize it, I'm going to defend myself by just not even taking the glucose in."

And we see that because that glucose is actually shunted toward other pathways that make protective compounds and regenerative compounds. And this would be no problem if there was an alternative fuel source coming in. If you can't use glucose but you have, I don't know, this crazy thing called ketones maybe instead, it's not as bad a problem.

You might still have some fuel gap there, but not as much because you have some fuel. But most people are hyperinsulinemic all the time and even if they're not hyperinsulinemic, they're just eating a lot of carbs all the time. They don't have the ketones so there's no glucose, and so there's nothing else.

Bret: So, from a prevention standpoint then, would you say that we still need the ketones, or do we just need to prevent the situation in the first place with the glucose so high and the brain becomes resistant to it?

Amy: Yeah, thank you for asking, because this... I don't think everybody needs a ketogenic diet to potentially prevent Alzheimer's. What we do have to do is eat and live in a way that keeps blood glucose and insulin within a normal range. Some people are going to need less than 50 g of carbs, less than 30 g of carbs to achieve that; some people won't.

And I really... you know, if you look around the world historically, we have billions of people that age gracefully with all their cognitive faculties intact and they're not on ketogenic diets. It would be stupid for me to say that strawberries cause Alzheimer's disease or parsnips cause Alzheimer's. It's not the carbs per se, it's like all the confounding factors that come together to make this problem.

So, I think if somebody wants to be in ketosis all the time or be on a low-carb diet all the time as a potential preventative, I think that's great. But I don't think everybody has to. I think, like I said, the thing has to control insulin and blood glucose, and it's not just the glucose. A B12 deficiency alone can cause cognitive impairment, choline deficiency, you know, some of the fats, long term untreated hypothyroidism can cause cognitive impairment.

So when I get someone that's coming to me for that reason, it's not just about the insulin. That's a big piece of it but all this other stuff has to be looked at, so I think, how do you prevent Alzheimer's? Kind of the same way you want to prevent all the other stuff we talked about - diabetes, cardiovascular disease. Keep yourself healthy, stay active, get some fresh air.

I wish that we could quantify because everyone - you included and me included - I do believe there's a role for healthy social relationships and getting sunlight. I mean, we have these gorgeous surroundings here and I know people can't see through the window here in Utah, but it's gorgeous here, I've never been here before, you know, for sunlight, for love in your life. But I don't know that anyone's actually able to quantify that.

What exactly does that do, how much do I need of that? And I kind of also hope we don't quantify, that's the kind of thing that shouldn't be quantified. Just go enjoy your life.

Bret: That's a great point, right. Because then you start counting your macros so to speak.

Amy: And then you're like, how much social connection have I had this week? And I'm like, no that's not the point.

Bret: That's not the point, oh man, right.

Amy: How much does my husband love me?

Bret: Great point, I like that a lot, that's great. But going back real quick to what you said before... It's not the strawberries, it's not the parsnips. So, part of it also has to do with where you are starting from, because if you already have diabetes, if you already have hyperinsulinemia, then yes, that big bowl of fruit, that big bowl of root vegetables could be contributing to the problem but it's because your metabolism is already broken at that point and you're already starting from a disease standpoint, whereas if you reverse that and you're not starting from a disease standpoint, then all of a sudden the parsnips and the strawberries won't have the same effect.

Amy: exactly, I agree. I think that the type of intervention needed to reverse a disease once it's already in place is not necessarily the one you need to prevent from happening in the first place. And I use the analogy of an exterminator. If you have an insect infestation in your home, you call the exterminator, they set off this big toxic bug bomb, problem solved. That doesn't mean that you needed them to come set that bug bomb off to prevent an infestation.

What you could have done is keep food sealed, keep your windows closed, you know, these lower level safer things that would have prevented the problem from the first place. But you're right, once you're already in the disease process, desperate times call for desperate measures. Not that I call keto a desperate measure but the more severe your problem is, the more, you know, strong an intervention you need.

Bret: Yeah, okay, very good. Now, can we take a minute to talk about alcohol?

Amy: Sure.

Bret: You told me recently about this fascinating study that you had read. And I know it's a little bit off topic from what we've been speaking about, but we've had an earlier podcast about alcohol and how it fits into a keto lifestyle, because, let's face it, alcohol is very prevalent in our society and it's a big part of people's social structure and part of their life and their enjoyment.

And sort of the traditional teaching is that it shouldn't fit into a keto lifestyle because it's carbs, because it's sugar, because it can affect your liver and it can affect your ketone production. You read a fascinating study that sort of stated the contrary, so just give us a little snippet about that study.

Amy: Yeah, this study was a little bit nuts because I think it was done in 1970s, so I assume that was before the IRBs, the review boards, and so you could kind of get away with doing some crazy things to people in an experimental setting that would never get approved today. They gave these subjects about 46% of their calories from alcohol, from ethanol. And one guy, one subject even had up to 66%, and the remainder of the calories were either-- they had a cohort of a lower carb higher fat and a cohort of a higher carb lower fat.

And in both groups the alcohol either did nothing to ketones barely or it actually increased them. And it seemed to increase them more in the group that were on the higher fat, lower carb diet. And those people should have had ketones anyway, it was a ketogenic diet they were on anyway.

But the alcohol raised the ketones well above and beyond what would have been just from the diet alone. I don't think that's not necessarily a reason to drink. If you're looking for high ketones increasing your alcohol intake would not be my first recommendation, but I do think alcohol can fit into a ketogenic lifestyle if you do it intelligently and you drink the right things. I mean, beer is liquid bread, but there are some dry wines that are very low in carbs, distilled spirits are zero carbs.

The only problem with alcohol is what we add it to, it's the pineapple juice and the apple juice, the cranberry juice. And I think alcohol can fit but it's not a weight loss tool. If you're drinking, it's still liquid calories, even if it's low-carb, it's not calorie free, so it can interfere if you're really struggling to lose body fat.

But there's ways to incorporate it safely but really for most people it doesn't lower the ketones. I think people need to be aware... You've probably addressed this, if you had a show about alcohol-- alcohol hits people harder and faster on a keto diet. So always be safe, be responsible. And the thing is, somebody tried to explain the mechanism to me and it's very complicated, I only understand a little about it, but because of the way that alcohol affects the liver and the way the liver metabolizes alcohol, alcoholics actually sometimes have very, very freakishly low A1Cs.

And it's because part of it is supposedly alcohol inhibits hepatic glucose outputs and gluconeogenesis. But I think there's other mechanisms involved too. But if you want to lower your A1C again, alcohol consumption is not the way I would recommend you do it.

Bret: Right, another example of the science and the mechanisms begin interesting, but maybe confusing the issue more than they're helping the issue. And I agree in the beginning if someone is doing this to lose weight, and get into ketosis, alcohol has a very little role if any. But once you sort of hit that steady state once you've had your success and if that's part of your life you want to bring back, it certainly can have a role in the right way.

Amy: Yeah, yeah, it can fit. And one thing is people have to be careful, because alcohol lowers inhibitions, and when you have a drink or two, you might be inclined to eat something that you wouldn't normally eat, especially when you're at a restaurant where you have a lot of starches and sugars that are literally within an arm's reach. If you're drinking at home and you have none of those in your house, you don't have the option to eat it, it's a slippery slope.

Bret: Yeah, its most detrimental effect is probably its effect on the brain and not its effect on the body. Well, this has been a interesting tour on a number of different subjects which you can speak very well on and it's clear you've got a vast amount of experience and knowledge and can impart that knowledge in a way that's easy to understand, that's why I love your series, Keto Without the Crazy. You really make it simple for people to understand.

Amy: Thanks, that's my whole goal, it's to un-complicate it.

Bret: Yeah, so, where can people go to learn more about you and hear more what you have to say?

Amy: Sure, my website is tuitnutrition.com - T-U-I-T-nutrition.com, and my Twitter handle is the same; TUIT nutrition. My book is the Alzheimer's Antidote they can find that on Amazon, and yeah, just a couple months ago I started my YouTube channel, so you can just look for Tuit Nutrition on YouTube.

Bret: Well I look forward to seeing more information from you.

Amy: Thanks so much.

Bret: Thanks for joining me.