The Human Upgrade: Episode 1123

[00:00:00] **Dave:** You're listening to The Human Upgrade with Dave Asprey. Today is an interview with a guy who's probably done more than you might know. His name is Dr. Gundry, well-known guy and a friend. He's written The Plant Paradox, the Longevity Paradox, and the Energy Paradox, and he's maybe best known for his work on lectins, one of the plant toxins that he and I agree are causing some problems in people, not always in the same people the same way, but a big deal.

[00:00:32] What you probably don't know is he's also a pioneer in robotic cardiac surgery amongst other many different things. And on that note, I actually had my first robotic surgery yesterday with a robot inside my abdomen floating around, stitching up a very small hernia that's been there for a while that I decided to preventatively get repaired.

[00:00:54] But I've never done robotic surgery before, so it's cool to be on the phone with someone who, years ago, has been a pioneer in robotic surgery because it's amazing what you can do. So Dr. Gundry, appreciate your work in the world of traditional and alternative medicine. Thanks for being here.

[00:01:09] **Steven:** Well, good to see you again, Dave, and hopefully you'll have a quick and speedy recovery, and good for you.

[00:01:16] **Dave:** I am recovering quickly. Haven't had to use painkillers. And for listeners, go to daveasprey.com/heal, and there is a little mini half hour documentary of everything I do before and after surgery so that I can heal faster. So you just want to be stronger when you go in and stronger when you get out. It's free.

[00:01:34] Now, this is your sixth time on the show. In fact, that's putting you up there to be one of our most common guests. Last time was number 912, and so it's been a few hundred episodes since you're on. I find you just have this incredible energy and curiosity about the world, which you've been able to maintain through, I'm going to say, multiple segments of your career in medicine.

[00:01:58] And we're going to talk about your new book called Gut Check, about reversing diseases and mental, physical, emotional health and things that are powered by your gut. But before we get into that, what's keeping your energy so high?

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[00:02:12] **Steven:** I still see patients six days a week, even on Saturdays and Sundays. And, in a way, I guess I don't have to do that anymore. But one of the things that energizes me is that most every day I get to see someone reverse a disease process that they walk through the door with dietary advice and supplements.

[00:02:42] And not only do we see it in a physical manifestation, but we can measure it by lab tests for leaky gut. We can look for autoimmune markers that resolve. Like I say, not a day goes by that I don't get to witness what I guess I would've called miraculous long ago, but I don't think of them as miraculous anymore. I think of them as something that I would expect to see if things were working the way it ought to work.

[00:03:16] **Dave:** That's awesome. Going from miraculous to just how it's supposed to be. It's funny. I was at Joe Polish's Genius Network event. This is a guy who's been a marketing mentor for more than a decade for me and a dear friend. He's been on the show too, and he had someone on stage who reversed stage four cancer in a couple of months doing all of the biohacks and then some.

[00:03:41] And what he found in his research was that he found more than 2,000 people who had reversed it. And all of them said the same thing. When they went into their doctor, said, do you want to hear how I did it? The doctor said, you couldn't have done it, therefore, it's a miracle.

[00:03:55] **Steven:** Right.

[00:03:56] **Dave:** So how did you step over that line from being a western medical doctor to saying that wasn't a miracle, there's a reason for it?

[00:04:05] **Steven:** I don't want to rehash things, but over 25 years ago, I met this guy who I call Big Ed, who had inoperable coronary artery disease, 48 years old, and every blood vessel in his heart was clogged up, and you couldn't put stents in it. You couldn't do bypass. And basically, in six months' time, this guy, by following a diet and taking a bunch of supplements from a health food store that he did pretty willy-nilly, reversed 50% of the blockages in six months.

[00:04:42] And I was taught that that was impossible, and I decided to figure out how he did it. And so I've spent 25 years now trying to figure out how he did it. And then every year, I get

closer, and the new book, Gut Check is the next iteration. I don't write a book unless I find something new that I think people should know about.

[00:05:06] First of all, it's fun to write a book because you and I both head down rabbit holes that we probably never thought we were going to go down. I hilariously don't do an outline when I start writing a book because, invariably, if I did, the outline would totally be thrown in the trash, a third way in.

[00:05:28] Each time, I'll get people new information. And the great thing about Gut Check is basically my attempt to summarize what Hippocrates said 2,500 years ago, that all disease begins in the gut. And how that guy knew that-- nobody knew about the microbiome, but we're beginning to realize, I hope, that there's a whole lot more that we need to know about the microbiome and the wall of the gut and intestinal permeability, AKA leaky gut, and what you can do to fix it.

[00:06:09] And I think he properly should have said all disease begins in a leaky gut. And I'll still stand by that. Conventional wisdom, I think was-- what was it? Maybe Paul Sagan said, science only advances by questioning conventional wisdom. And so I think that's probably what we should do.

[00:06:33] **Dave:** Well said. Although I think Hippocrates might have been mistaken because there was things that didn't exist in his time. Today I would say all disease starts in the gut, or in Monsanto, or Bayer, or Dow Chemicals factories. Does that sound like it might be part of the problem?

[00:06:54] **Steven:** Absolutely. Just remember that sickness is good for business.

[00:06:59] **Dave:** This show, not sponsored by Big Pharma. There you go.

[00:07:05] **Steven:** You and I will never have a contract with any of them, I suspect.

[00:07:10] **Dave:** Probably not.

[00:07:11] **Steven:** Probably not. Yeah. And I talk about glyphosate and all these other wonderful herbicides and biocides before, but I get into it even more in Gut Check.

[00:07:26] **Dave:** That was why I brought it up. The idea that somehow we can spray this crop that is affecting microbes in the soil without affecting microbes in the soil that's in our gut doesn't make any sense.

[00:07:42] **Steven:** Yeah, it's interesting. It was actually patented as an antibiotic, as a fungicide. And so the idea that the shikimic pathway, which doesn't exist in humans, does exist in bacteria, and that's what it targets. And what's really scary is not only can glyphosate cause leaky gut directly, but glyphosate, as I talk about in Gut Check, really targets the tryptophan pathway bacteria in our gut.

[00:08:16] And tryptophan is rather important for making serotonin, 5-HTP, even dopamine. And so many of the things that we now see happening to us, anxiety, depression, cognitive decline, Parkinson's, can be at least partially laid at the feet of glyphosate and its cousins.

[00:08:41] **Dave:** Wow.

[00:08:42] **Steven:** What's interesting to me is about 80% of my patients are autoimmune patients who aren't getting better with traditional treatment and 90 plus percent of these people resolve their autoimmune disease published data from me at the American Heart Association within nine months to a year.

[00:09:03] And what's really interesting about these folks, including me, is that these folks will resolve their Hashimoto's, or psoriasis, or Crohn's, or rheumatoid arthritis, and they'll go over to Europe. And they'll be tempted, and they'll eat croissants, and baguettes, and pizzas and pasta. And they do remarkably well. And almost to a person, they go, oh, Dr. Gundry has cured me. I can have all these things now.

[00:09:36] **Dave:** No, no, no.

[00:09:38] **Steven:** No, no, no. And they come back and start eating our stuff, and within weeks, they flare, and they're on the phone going, what? I thought you cured me. I said, no, you just went to a glyphosate-depleted environment and just learned firsthand the power that glyphosate has over destroying us.

[00:10:01] **Dave:** I was in Turkey recently and Dubai for a couple of weeks, and as an experiment for the world of biohacking, I ate two kilograms of baklava over that time, which is

like four pounds. Not only did I not gain any weight. I took my gluten digesting enzymes and all that kind of stuff. No symptoms, no brain fog, none of that stuff.

[00:10:26] And I know glyphosate's a big part of it, but European wheat is soft wheat, and American wheat is hard wheat. And it's the species that makes a big difference as well. I don't touch wheat here. If I lived in Europe, I wouldn't eat it very often, but if I'm there for a couple of weeks and I'm having a treat, I don't mind doing that.

[00:10:46] Recognizing that it's like taking a puff of a cigarette at a party that you might do once a year. It's not good for you, but it's probably not going to kill you if you did it that one time. Is that a good mindset?

[00:11:00] **Steven:** Yeah, I think, one of the things that I talk about in Gut Check, which I haven't talked about before is, most of my patients now, we not only do testing for leaky gut, but we also test for the various antibodies, IgG antibodies, to the various components of wheat, wheat germ, gluten, in the various components of wheat gluten like laden and glutenin, and non-wheat proteins.

[00:11:30] And here's what's shocking. Every one of my patients with leaky gut, and that's virtually everyone who walks through the door, has 100% antibodies to gluten. And 98% have antibodies to wheat germ, gluten and 100% have antibodies to non-wheat proteins, 100% across the board. Even people who have not eaten gluten for 10 years being gluten-free. So that's bad enough.

[00:12:01] What's exciting, and the reason I do this, is if you follow these people and watch them repair their leaky gut, within nine months to a year, 100% of them no longer have antibodies to these components of wheat. The antibodies to gluten are gone. The antibodies to wheat germ, gluten, are gone.

[00:12:26] You can actually retrain your immune system. You can make it stand down. But I think the message is when people say, oh, gluten sensitivity, that's a myth, well, it's not a myth. It's much bigger in this country than I think anybody realizes. That's one of the take-home messages from Gut Check, is if you've got an issue of gluten, at least in this country, and the other components of wheat, particularly whole wheat, like wheat germ, gluten, is only in whole wheat.

[00:13:00] **Dave:** Of which is dumb.

[00:13:01] It's really dumb. And I just had a debate recently with a vegan cardiologist who wanted me to become convinced that every study of heart disease prevention, whole grains was one of the keys to heart disease prevention.

[00:13:20] **Dave:** I feel like that's almost a religious thing at a certain. You can show all these mechanistic things where we know this chemical does this and it does it reliably and repeatedly, and it does it in animals, and it does it in humans, and it does it in yeast. And they just look at you and say, but that can't be because whole grains.

[00:13:41] I feel it's that Idiocracy movie, like, well, we're spraying Gatorade on our crops because electrolytes, even though the crops are dying, it doesn't matter because electrolytes. In ancient times, you would feed whole grains to the very poorest segments of the population, usually who were enslaved because they wouldn't starve to death, and it was bad for them.

[00:14:02] But since you didn't care about what their outcomes were, they were basically free labor with no choice about it. You'd feed them the worst food. That's what whole grains are. And then if you could afford it, you'd scrape the bad parts off and you'd eat the inside, which is why white rice is better than brown rice too.

[00:14:18] But today you have these, is it a form of masochism or self-loathing that causes people to like whole grains knowing this, historically knowing everything? Or is this just propaganda? Why are we stuck on this still? The evidence is so clear.

[00:14:34] **Steven:** Well, as I responded, sickness is very good for business. And when I first decided to look into this, most of my colleagues were convinced that, let's just take coronary artery disease, for instance, this was a process that was going to occur. It was going to occur in virtually everybody.

[00:14:57] And your only hope was to slow it down-- not reverse it, slow it down. I remember I was a discussion of the American Heart Association a number of years ago about a new statin drug. And this statin drug, over a course of about two years, reduced plaque formation by 0.01% compared to the placebo. And this was hailed as a major advance.

[00:15:31] And I'm going on the discussion, wait a minute. This is so insignificant that you needed statistics to prove your point. It didn't change outcomes at all. It just got the plaque a little bit smaller. That's totally different than making plaque reverse. And so many of these outcomes studies really are looking at the wrong thing.

[00:15:53] They're trying to say, well, we've slowed this process down a little bit, and that's a wonderful thing and that's the best we can do. And that's not true. We can reverse these processes by finding out what the culprits are.

[00:16:09] It's like Stefan Lindeberg, who unfortunately has passed away, but he spent his life studying diet and disease in the Western diet. And one of the things that he concluded was that grains and beans were a negative aspect of the Mediterranean diet that was compensated for by all the other positive aspects.

[00:16:34] Dave: But the bluezones. What about the blue zones? Tell me about the blue zones.

[00:16:39] **Steven:** The blue zone. I spend a whole chapter debunking the blue zones. Interestingly enough, the Nicoya Peninsula in Costa Rica, and these folks do eat corn and beans, indeed. What's so unique about the Nicoya Peninsula as compared to the rest of Costa Rica who also eat grain, corn, and beans, is that they are sheep herders.

[00:17:06] **Dave:** Ah.

[00:17:07] **Steven:** Yeah. In fact, it's like a gerrymandered district, and they published studies to show that the beans and grains are the negative aspect of their diet. Even the people admitted this. That's compensated by the fermented sheep products, yogurts, and cheeses that only they eat. But that doesn't do well if you're trying to convince people that a vegan diet full of grains and beans is really good for you.

[00:17:38] **Dave:** All right, guys. That means you want to go out and you want to read Gut Check, Dr. Gundry's new book, because it provides evidence-based counterpoints to the blue zones. And I also want to point out that Dan, the author of the Blue Zones Diet is a fantastic human being with good motivations. He's been on the show. I like him.

[00:17:58] We both interested in longevity, as is Dr. Gundry. So good intentions don't always create accurate results. And in this case, there's so many holes in it. And the most glaring one,

aside from the sheep's Manchego paradox, you could write a whole book about that probably. Manchego being sheep's cheese if you're not into cheese.

[00:18:17] But we're also looking at Hong Kong, which wasn't included. It has the highest meat consumption of anywhere on Earth, even above the US where people live the longest. Isn't that weird? So it feels like we're running into this China study of paradox, which is also a book that is a paradox where there's so many scientific mistakes and data cherry-picking mistakes that, just don't fall for it.

[00:18:44] Go to Peru. I was just there. And this is the birthplace of rice, and beans, and corn as a way to feed people when there was not enough food. And the average Peruvian is about as high as my waist. And in the parts of China-- by the way, China meat consumption's going up as they're all trying to trick us to eat less in the US-- the average height is three inches higher of their children when they eat meat. And they're trying to make us eat bugs, and corn, and stuff, that's just bad for us. Yikes. What about bug? Are bugs free of lectins? Should we be eating bugs? What's your take?

[00:19:17] **Steven:** No, I think bugs have a place in our diet that's a easy source. And interesting enough, chiton in insect shells and in shellfish is one of the best absorbers of lectins there is. In fact, when I eat shrimp, I actually eat shell and all because it's actually a great source of a lectin-seeking sugar molecule, chiton.

[00:19:44] **Dave:** It's interesting. You can get powdered chitin to bind to lectins in capsule form. In fact, you make one of those, don't you?

[00:19:51] **Steven:** Yeah, I do.

[00:19:52] **Dave:** Yeah. So these lectin-absorbing compounds, it can work for that. The problem is if you're chewing it up, you're probably not getting much surface area. And the second thing is there's a lot of allergic stuff that happens over time with people who are exposed to chitin from what I've seen.

[00:20:07] Probably not when it's purified in powder, but when it's ground up bugs. And then there's the amount of carbohydrate versus protein. They're very low in protein. They're high-end

parasites. The omega-6 ratio in bugs is not good. I checked that a long time ago. So I'm thinking that they're going to feed glyphosate-soaked corn to bugs and grind them up.

[00:20:29] **Steven:** Let's not do that.

[00:20:32] **Dave:** That's Bill Gates. I think he's got it in his business model. It's just not okay.

[00:20:37] **Steven:** You bring up a very good point. You are what you eat, but you are what the thing you're eating ate.

[00:20:42] **Dave:** That's a good point.

[00:20:43] **Steven:** And one of the things I think that's scary that I talk about in Gut Check is you can take a organic free range chicken and feed it basically corn and soybeans, and you will have an omega-6 to omega-3 ratio of 25 to 1 in a commercial chicken. Should be 3 to 5 to 1 in a traditional diet.

[00:21:12] And so even though it's organic, and even though it's free range, it's basically an ear of corn with feathers. And if people go, oh, I eat so healthy. And then when I see the healthy things they're eating and take these things away from them, all of a sudden, things start resolving.

[00:21:35] **Dave:** Wow. So you're telling people to avoid eating chicken?

[00:21:39] **Steven:** I actually am telling people more and more and more, to avoid beef, lamb, and pork and milk products that aren't fermented with the exception because of Neu5Gc .

[00:21:53] **Dave:** Oh, we're going to talk about that one.

[00:21:55] **Steven:** Okay, we're going to talk about it.

[00:21:56] **Dave:** What about chicken?

[00:21:57] **Steven:** If you get a Lectin-Light Chicken-- and I send people to lectinlightchicken.com. Farmer Dan in Texas, and I have no relationship with him except I'm a huge fan. He feeds his chicken lectin-free diet. He pastures them. He now has other farmers doing this. In fact, I just had a Thanksgiving Turkey from Lectin-Light Chicken.

[00:22:26] And he's now got this ratio down to about 5 to 1 in terms of omega-6 to omega-3. And we just tweaked his formula a little bit. I'm hoping it'll work out, adding more flaxseed to his formula. But he won't give his chickens any lectin-containing grain products anywhere.

[00:22:47] **Dave:** That's what we do for our chickens on the farm on Vancouver Island. They eat as many bugs and as much protein and fat as they can get because they're carnivores.

[00:22:57] **Steven:** Yeah. Yeah. We forget they're carnivores. You're right.

[00:23:00] **Dave:** Yeah. They'll strip a carcass if you let them. You could throw a dead cow in with your chickens, and the next day, all that would be left would be bones. They're that ravenous. And maggots are their favorite food, by the way. So they'll leave the corn forever if I even fed them corn. So the problem there is there aren't many chickens fed that way, and you're still not getting the same kinds of fats in ruminants.

[00:23:26] Now, how much in Gut Check-- I don't think that there's a lot on Neu5Gc unless I'm-- I've read all of your books, but I don't have them all. What's in what book? So I think you covered that in the book before in the Longevity Paradox.

[00:23:40] **Steven:** Actually, it's in the Plant Paradox, but there's all new information in Gut Check that makes me really pause much more than I did before. I got interested in Neu5Gc, which is a sugar molecule.

[00:23:55] **Dave:** Let's define that for people. Yeah.

[00:23:57] **Steven:** There's a sugar molecule that lines our gut. There's a protective layer of sugar and lipids that line our blood vessels called the glycocalyx, and there won't be a-- this also occurs in our blood-brain barrier, and it also occurs on our joint surfaces. And it's composed in humans of a very, very similar sugar molecule called Neu5Ac. Neu5Ac differs from Neu5Gc by one molecule of oxygen. They're otherwise identical.

[00:24:37] What's interesting is that if we feed humans Neu5Gc-containing food, it's immediately absorbed in our small intestines, and we develop antibodies to Neu5Gc, vigorous antibodies. And the more Neu5Gc foods we eat, the more antibodies against it we make. Now, we've known that for a considerable period of time.

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[00:25:07] What's new is we thought, and I wrote about this in the Plant Paradox, that because Neu5Ac and Neu5Gc are so similar, that perhaps because we make antibodies to Neu5Gc, that we would attack the lining of our blood vessels, our blood-brain barrier in our joints, which have Neu5Ac in them because they look so similar, molecular mimicry, autoimmunity.

[00:25:33] And that was the theory. Well, there's no theory involved anymore, so association does not mean causation. What we now know is that Neu5Gc can be substituted for Neu5Ac in our various glycocalyx. And the more Neu5Gc we eat, the more it's substituted for Neu5Gc.

[00:25:59] So that means that it is an antigenic substance, and we now incorporate it into our glycocalyx, into our blood-brain barrier. And interesting, animals who make Neu5Gc aggressively keep it out of their brain because it's such a big cause of neuroinflammation. But if you incorporate it into the blood-brain barrier, you then attack the blood-brain barrier, and it gets into your brain, same way with the joints.

[00:26:28] So this bad news is that it's no longer in my humble opinion association. It's a causation, and that's the mechanism. So what can you do about it? Well, here's the great news. If you ferment food, milk products, the bacteria eat Neu5Gc. It's a sugar molecule. They love it.

[00:26:52] If you ferment sausages, and traditionally, all sausages are made by bacterial fermentation, all in the Neu5Gc is gone. It's eaten. That may be one of the reasons the endurances, which have the highest life expectancy in the world, this little country between Spain and France in the Pyrenees Mountains eat sausage every day, and they're sheep herders.

[00:27:21] But they don't drink sheep milk. They eat yogurt, and they eat cheeses. For instance, Parmesan cheese has no Neu5Gc in it. So to me, that's the exciting news. People used to eat nose to tail, and they had no refrigeration. So they always preserve their foods by fermentation, including their meats.

[00:27:44] So have yourself some sausage, not Jimmy Dean's, but have some from Italy, or Portugal, or Spain, or France. But I now, with this new information, can you have grass-fed grass-finished beef? Yes, but I think we have to be aware that it'll get incorporated into your glycocalyx.

[00:28:11] But the good news is the more Neu5Ac containing foods, which is fish, shellfish, and chicken, properly pastured chicken, will actually kick out Neu5Gc out of the glycocalyx. And that's proven research too that I talk about.

[00:28:30] **Dave:** Did you come across any of the research showing that grass-fed animals have substantially lower amounts of Neu5Gc versus grain-fed?

[00:28:40] **Steven:** No, I didn't. Unfortunately.

[00:28:41] **Dave:** Yes. There's a couple of studies that I came across around that because I really went deep on this a while ago. And I can actually feel a difference in systemic inflammation if I eat grain-fed versus grass-fed.

[00:28:53] And I am almost exclusively grass-fed at this point. On rare occasions, if I'm at a restaurant, they have some Wagyu that's not grain-fed. Sure, fine, whatever. And also, even before that, before I understood all this, because I was working on improving my nervous system, you can get supplements-- I think they still make them-- that contain what's called sialic acid, which is basically the overarching class of this.

[00:29:19] So you can take Neu5Gc, the good stuff, as a pill. You could even preload with that before eating a big corn-fed steak. Or we could just stop making industrial meat and do distributed agriculture so animals crap everywhere and build soil that sucks up carbon, the way the world's supposed to be. And we're building that world.

[00:29:36] And if these billionaires think they can buy up all the farmland, I'm thinking they might be wrong because, at a certain point, if a crop dust or a tractor comes by spraying stuff and you're next door, I think there's a lawsuit, if not outright sabotage that's going to start happening because people don't like their kids getting poisoned anymore. We've had enough of that.

[00:29:55] So I am not worried, and my lab tests are supporting this, but I'm grass-fed. So if you wanted a good argument to do it, I would love to do this fermented meat thing. When I was a raw vegan, when I got really sick, as always happens from that stuff, this was back in maybe 2003, 2004.

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[00:30:14] Man, so much of the pain, all this stuff from the lectins, and in my case, I think oxalates were even worse than lectins, but the whole thing was just a shit show and caused a lot of autoimmunity. And even some things, I'm still reversing.

[00:30:27] That's why I'm so passionate about this vegan nonsense. But at the end, I said, all right, I'm going to incorporate raw meat. And there was a very early guy who's since passed away who was, oh, you have to eat raw meat, but has to be fermented. And all these followers were eating you jars of fermented stuff.

[00:30:41] And going back to Eskimo studies and saying, look, they hang the salmon up in the tree for three days, then feed it to the dogs, and then the dogs are really powerful. But feed fresh salmon, the dogs don't do so well. And so there's all this stuff about fermented meat. And his followers are saying, I think I'm detoxing because I eat it, and I get all these symptoms.

[00:30:59] I'm like, yeah, those are called food poisoning. But I never fermented it that way. But histamine. And you leave meat out, like fermented sausage, yeah, it's going to eat up that Neu5Gc, but you're going to end up with some aggressive meat-eating fungus that also will eat you, and you're going to end up with large amounts of histamine. And even people who have good histamine tolerance, which I don't, maybe that's what the raw vegan diet did me.

[00:31:28] Long COVID has histamine sensitivity at this point. So how do we balance fermented foods which are high histamine against avoiding Neu5Gc against getting all of the nutrients in red meat? Because I tell you, chicken is not that good of a protein source compared to beef, and a mineral source as well, especially most of the chicken you can buy.

[00:31:46] **Steven:** Well, one of my problems that I see in my patients is iron overload, not iron deficiency. Yes, menstruating women can develop iron deficiency, no doubt about it. But iron ages us. And I've written about--

[00:32:06] **Dave:** Numerous times.

[00:32:07] **Steven:** So limiting iron, particularly as we get older, seems to me like a good idea. But, I guess an answer to your question, there are other fermentation products that I have written about, and others have written about, all the polyamines, spermidine, for instance, [Inaudible].

All of these are actually very useful compounds for longevity. I bet you you take spermidine. I do.

[00:32:36] **Dave:** Oh, yeah. I think I was the first guy to write about it in longevity circles before you could buy it. There was no spermidine supplements. I was taking a Japanese probiotic. I was importing without US labeling in order to get my spermidine levels up. And now you can just buy it, which is great.

[00:32:51] **Steven:** Yeah, we had, at Gundry MD, a spermidine supplement. We do. We actually have several that we had to hold because it was not generally recognized as safe grass. The minute it was generally recognized as safe, out came our spermidine supplements.

[00:33:09] **Dave:** Good for you.

[00:33:10] **Steven:** I was so devoted to it. But again, you got to play by the rules.

[00:33:15] **Dave:** Well, this is a big problem in the world. I'm sorry. I didn't hire the government to tell me what supplements I'm allowed to take since I didn't pay them to do that. I didn't elect them to do that. I don't think they have a right to do that, and I don't recognize it, so there's that. I will take the supplements I choose. And if you'd like to block me from doing that, then you're no longer my government.

[00:33:34] There we go. I've had enough of that. I think we need to have an offshore oil platform where you can go buy your supplements, get healthy, and then come back into the land of, that might not be safe, because, hey, there's a reason I drink--

[00:33:48] **Steven:** That's vitamin toxicity.

[00:33:51] **Dave:** Yeah, exactly. Who knows what you might do. Yeah. Speaking of which, take your vitamin D. I don't think your coffee cup's big enough. That's a problem there.

[00:34:01] **Steven:** There's actually 1, 2, 3, 4, 5, 6 different types of tea in this coffee mug.

[00:34:11] **Dave:** That's impressive. Let me ask this question. Oxalates. I wrote more about them in my last book. Oxalates are like lectins. They're an anti nutrient. I'm starting to think they're way more implicated in diseases of aging than I ever would've imagined when I wrote my last couple books. And it turns out matcha, in particular green tea has relatively high levels of it to

the point that some of the people I've been chatting with like me who are really watching this carefully, they notice changes in muscle soreness and joint stiffness from two cups of matcha. They'll drink it one day. The next day, oh look, symptoms are back. Do you worry about oxalates?

[00:34:51] **Steven:** We normally would have a bevy of oxalate eating bacteria in our microbiome. And one of the things to me that's interesting is if you look at people who have oxalate-forming stones or oxalate stones, they lack oxalate-eating bacteria in their gut microbiome.

[00:35:14] The people, at least in my practice, who are convinced that oxalates are a problem somehow no longer react to oxalates once we get all the other mischief makers out, including glyphosate-containing foods. And so I think our problem is we-- and I've written about this-- used to have a fantastic defense system against the plant defense system, against being eaten, and that was our microbiome.

[00:35:49] There are bacteria that love to eat gluten. They're long gone. There are bacteria that love to eat oxalate. They're long gone. So I think a lot of these issues that we see in our current health is the fact that for the past 50 years we've been virtually decimating our offensive front four that's protecting the quarterback, and now we're getting guys out of the bleachers to come and try to be the front line.

[00:36:18] And you, the quarterback, are getting smacked all the time, and that whole defensive system is gone, and we've done it. Among other things, we've starved these guys to death. We've given them absolutely nothing to eat. We poisoned them with antibiotics.

[00:36:37] You and I both know the recent researcher looking at fast food, glyphosate and antibiotics in almost all fast foods in this country. Panera Bread has the highest glyphosate content of any fast food restaurant. Holy cow. And it's healthy.

[00:36:56] **Dave:** It's crazy what's going on out there. I suspect that we're right on the cusp of genetically engineering gut bacteria to do the things we want them to do. I had the first genetically-engineered FDA-approved probiotic on the show for Episode 1000. This is a probiotic that eats alcohol because 80% of the damage, or 80% of the aldehyde formed by alcohol is formed by bacteria in the colon.

[00:37:24] So they give you a 24-hour bump in things that metabolize aldehydes so you don't get all the aging effects from alcohol. I still don't think alcohol's good for you, but I would take a genetically-engineered gut bacteria that would just ravage any presence of oxalate in my gut. I would love to do that.

[00:37:43] There was a company about 10 years ago who was making a probiotic that ate oxalates. It was somewhere in Europe, and it was over the counter, and then they got attacked by regulatory authorities. So now they're looking to make it a drug. I'm pretty sure that they failed, which if you really make a dent in the market for kidney stones, that could be terrible economically. How dare you? I like to quote, Greta Grundberg a lot. How dare you? Yeah, how dare you? It's a serious thing.

[00:38:14] You go back to the 20s and 30s, before we had glyphosate, oxalate poisoning from foods was all over medicine. They were talking about it all over, and also people use oxalic acid at home to clean their sinks, and people would touch it with their hands, and they'd get kidney stones and all these other things.

[00:38:28] It feels like that kind of went away. So I balance my lectins. I balance my oxalates, and I do sense if I have beets and green tea, I feel it the next day, but maybe it's because I was a raw vegan, and I load it up every cell in my body with razor sharp crystals.

[00:38:42] So I look at that, Neu5Gc doing the grass-fed thing. I don't think I'm perfect, but I'm better than I've ever been. And now I'm looking like you. How do we bolster defenses? You have your pills that capture lectins. What is that called by the way, that product that you make?

[00:38:58] **Steven:** Lectin Sheild.

[00:38:59] **Dave:** Lectin Shield. Okay, good. So that's a great idea. You should take that if you're going to go to Europe and eat two pounds of baklava. Trust me.

[00:39:07] **Steven:** Believe it or not, yeah. I take about 10 of those when I go to Europe and know I'm going to be mischievous. You bring up an interesting point. I think you may have noticed in the news, I think it was last week, and I'm sorry, I'm blanking on her name, the scientist who won the Nobel Prize for the CRISPR.

[00:39:26] She just formed a company and raised $70 million to head after the microbiome. She's out of Berkeley, and she's going to use viral vectors to change our microbiome for the good. Now, interestingly enough, using viral vectors isn't a novel idea. Eli Lilly was formed by using bacteriophages for the treatment of infectious diseases, bacterial infectious diseases.

[00:39:59] Bacteriophages are viruses that infect bacteria and much of the genetic changes in bacterias actually because of viral genomes being implanted in bacteria. So the idea has some merit, but I'm not sure I want to infect my bacteria aggressively with viruses, but we'll see. But she just raised $70 million.

[00:40:25] **Dave:** There's definitely some interchanges that we are going to engineer in ourselves, and the trick is to make sure that you get to choose, and it's not one of these ideas, like, oh, this seems like a good idea, let's infect mosquitoes so that anyone who's bid by a mosquito is allergic to the foods that nourish them.

[00:40:42] And by the way, yes, that's, I believe, a Bill Gates plan. Let's take away consent. So anyone who's doing anything to bacteria, it needs to be non-heritable like the ones that I had on my show called ZBiotic, the ones for alcohol. And that stuff dies, and it can't reproduce, and so there's protections. And I just had gene therapy for longevity on myself.

[00:41:02] You go to dave.com/genetherapy for info on that. And that only lasts for two years, and it doesn't enter the germline. So it's really important that we don't let these companies just engineer additional weaknesses into humans to create larger market size because if they do that, I think that there's a word for it. It's called evil.

[00:41:24] And now there's some stuff you've written about that I really want to get into. We can talk about all the stuff that so few people know about, and we're educating them as we talk. So I just love getting to hang out with you. But you talk about hormones and gut bacteria in a new way in Gut Check that's actually worth.

[00:41:41] You talk about microbial endocrinology, which probably makes every endocrinologist listening go, what the hell are you talking about? That can't be, therefore, it doesn't exist. Which by the way, is the most religious statement ever said. So talk to me about what that is, microbial endocrinology.

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[00:41:58] **Steven:** With each advance in looking at circulating hormones and where they come from, for instance, when we first talked about the gut-brain access, it was, well, there's neurons in the gut, and there's lots of neurons in the gut, and these neurons are the source of serotonin. And so the feel-good hormone is made by neurons in the gut. They go up to the brain. The brain isn't the source of it.

[00:42:29] Well, and now it turns out that it's the microbiome that makes most serotonin, not the neurons. And now we're beginning to realize that there's a microbiome that's in charge to almost all hormone production. For instance, there is an estrogen microbiome. The feel-good hormone, oxytocin, is made by L. reuteri or L. reuteri, whichever you like.

[00:42:59] And so this love hormone, oxytocin, that women produce the minute they see their baby, is produced by bacteria. And you can actually modulate those bacteria. And people, for instance, with anxiety and depression have a microbiome that's totally different, totally dysbiotic, compared to people who don't.

[00:43:25] And you can do animal studies of taking depressed rats and feeding their feces to happy rats, and the happy rats will get depressed, and so on and so forth. The scary thing is, and maybe the good news is a lot of women in particular don't realize that their estrogen, particularly postmenopausal women, may be being produced by a gut microbiome that's producing that, and maybe, just maybe, they may not want that to be produced during that time.

[00:43:59] The other thing that's interesting to me, as I look at these long-lived societies, the idea of menopause and menopausal symptoms seems to be virtually non-existent in these societies. They transition from having periods to not having periods without this crisis of mental health, physical health, that we seem to produce in the United States.

[00:44:28] And that's interesting. When I talk to these women, like in Italy, I ask them what it was like. And they go, huh? What are you talking about? What do you mean? What it was like. One day you stopped having periods. Have a nice day. Bye. So I think the more we learned about the microbiome, and remember though, Human Microbiome Project was just completed in 2017, the more we're getting an idea of what all these guys have been doing all along, they've always been there. We just didn't know they were there, number one, and we didn't know what they were doing, and where all this stuff came from. We couldn't imagine that bacteria, these stupid little

infectious devils, would be responsible for making serotonin. How dare they? And I spend a whole chapter talking about toxoplasmosis and how it is really good at manipulating human behavior, a single cell organism.

[00:45:29] **Dave:** I love it that you talk about that. My very first book, the Better Baby Book-- and there's thousands and thousands of babies who would not have been born without that book. I keep getting these messages from people. I read it, and I'm still reading it now. It makes me happy. I think I did the world is solid even though it wasn't a major bestseller.

[00:45:47] Pregnancy books never are. It's what got my kids to exist, so that in and of itself. I wrote a big part of a chapter on toxoplasmosis in pregnancy, and having cats in your house when you're pregnant is actually provably really bad for you. And so many people, even right now, a bunch of people just got triggered almost like vegans, and they're running-- in fact, they might be cat-owning vegans most triggered because they're vegan cats. And then it gets really sick.

[00:46:10] But whatever's going on there, man, they just go crazy guys. Yeah, cats are fun and all this stuff. Put them outside and keep them there. I've had barn cats. But if they're in your house and you have babies or you're trying to have babies and toxoplasmosis, there's a reason crazy cat ladies are a thing. They do that to you, and you can like cats and think they're cute and all that, but man, it can affect you.

[00:46:30] **Steven:** I had a cat in medical school. It's very hard to have a dog in medical school.

[00:46:34] **Dave:** Yeah. No kidding. The difference between cats and dogs is that if you die at home and no one's there, the dog will sit by you and guard your corpse until it starves to death, and the cat will eat your eyeballs. Just remember that.

[00:46:46] **Steven:** Oh, my little kitty wouldn't do that.

[00:46:50] **Dave:** So I like cats and dogs. I like animals. Animals like me. I just don't want to live with a cat because toxoplasmosis is such a problem. I guess if you're going to have a cat, it should be an indoor only cat, so they're less likely to get parasites unless they eat a mouse that comes in just once that has it, and then that's that.

[00:47:08] **Steven:** And the mouse will run towards the cat.

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[00:47:10] **Dave:** Yeah. I wonder what made the mouse run towards-- might it be a parasite? Of course, it is.

[00:47:16] **Steven:** A single cell organism.

[00:47:18] **Dave:** Okay, let's get into this. This isn't as big of a part of your whole Gut Check book, but you're an expert on this stuff. Years ago, at one of my biohacking conferences-- by the way, guys, biohackingconference.com, end of May in Dallas. It's going to be amazing. But I took pig whipworm eggs on stage and just took a little shot of them. And I did this because they cannot reproduce in humans. But there's an argument that larger parasites engineer to live in humans by nature, probably modulate immune function, and pig whipworms will turn on some beneficial immune behaviors that could heal leaky guts.

[00:47:54] I've tried rat tapeworm eggs and pig whipworm eggs over the years. Didn't get results from either one that were particularly meaningful. But what's your take on parasites in humans and all the different diseases and taking anti-parasitic things like femazole and parasites in cancer? Give me the parasite story according to Dr. Gundry.

[00:48:15] **Steven:** One of the arguments against the China study and how bad meat was for you and animal protein was for you is they didn't bother to compensate for the fact that liver flukes are a really big problem in China. And that if you actually correlated, everything that they said happened with the China study and meat, it was the liver flukes that were actually the problem, not the meat.

[00:48:44] So yeah, parasites are very interested in us, but there are some interesting human studies that these sorts of parasites which are temporary can modulate the immune system. There is a communication between our microbiome, our core biome, our fungi biome, and parasites that do communicate with the immune system.

[00:49:15] I went to medical school at Georgia, and hookworms were actually incredibly common among the particularly poor people who went around barefoot all the time. And we would actually see kids with eosinophilia type of white blood cell that's classic for allergies. And one of our professors of pediatric surgery, we'd have one of these kids in our hospital, and he'd ask us for a hemostat tweezers, and he'd go up a little kid's nose and pull out this fabulous hookworm out of the kid's nose, and we'd all go, whoa.

[00:49:58] And this was actually the same institution that pioneered fecal transplant for C. difficile infections back in the mid-'70s. How do I know? Because medical students, once a week, took a crap in what was called the honeypot, and we put the feces from medical students into a wearing blender and gave people medical student fecal enemas for the treatment of C. difficile, and it resolved dramatically. So yeah, parasites and what goes on in the gut is very interesting.

[00:50:32] **Dave:** It is also interesting that the vast majority of parasites people get are coming from plants, aren't they?

[00:50:40] **Steven:** Oh, indeed.

[00:50:41] **Dave:** All plants, like salad, greens, and fruits. And you get all these radical vegans saying there's parasites in meat. No, no, no. We cook the meat, dumb asses. That kills them. It's the salad that's causing parasites. Correct? Can you walk people through that?

[00:50:56] **Steven:** And it's interesting. If you look at most of the big epidemics of-- even bacterial infections and parasitic infection. Giardia is a classic. Particularly, if you go to Mexico or South America or happen to buy foods, particularly organic foods from Mexico, leafy greens, you may very well end up with a good case of Giardia, which is would more than happy to take over your intestinal tract for quite some time.

[00:51:28] And people go, but I eat so healthy. Well, so many times, the organic vegetables are fertilized with manure, and we forget that we are what we eat, but we are what the thing we're eating ate. And so you got to be careful out there.

[00:51:45] **Dave:** I had something happen to me a while ago in Phoenix. I had a salad at a restaurant. Next morning, I had disaster pants, and I would crap 20 times a day. And it was horrible. So I got all the parasite samples, all the gut bacteria, all the things you do at a GI doctor, nothing.

[00:52:07] They could not find it. I went to a specialist who sent it off to Africa. Couldn't find it. And finally, I found this old, old guy right next to Central Park in New York City, recommended by a friend, and he wrote six textbooks on tropical medicine in his career. And he also ran public health for New York state for several years.

[00:52:29] This was '80s. Just most fascinating guy I've met a long time. And he says, oh, all these young doctors, they never look in there to find where the parasites are. Good parasites aren't going to leave. They're going to stay inside. Bend over. Like, oh God. So he gets his little flashlight hose thing and goes, there it is. 10 inches up.

[00:52:49] I'm like, 10 inches? Good God. Thankfully, it was a flexible hose. He goes, all right, I got a sample. Call me in two hours. I'll tell you what you got. This is after thousands of dollars of taking different stuff, of trying everything. Calls me and says, you have a kind of amoeba that tunnels through the lining of your gut and forms cysts in your brain.

[00:53:07] Fortunately, your gut lining looks like it's still intact. I'm like, thank you, collagen. Thank you, eating all the good stuff. He said, oh, and you have Giardia. It looks like it's been there for a while. Take these. He gave me two pills. I don't remember what they were. I should have written them down.

[00:53:19] It was $1,200 at the pharmacy. And I stopped shitting after two days of being on the right medication for this thing. And he's saying, no doctor knows this stuff anymore. It's a lost art. But he said, why did you get this? Because whoever prepped that salad at that restaurant they had the 3:00 AM job.

[00:53:37] You know who gets the job at 3:00 AM? The people who just came in from Central and South America were most likely to have parasites because that's their entry-level jobs in restaurant as you're learning the language. So sanitation issue, but it wasn't from eating steak. It wasn't from eating pork, dirty pork, it was from eating salad. So if you're a vegan and you think I have parasites, let's do a parasite throw down. I have less parasites.

[00:54:01] **Steven:** That's interesting. Almost all of my patients who have these really bad GI issues with chronic diarrhea, or new acute onset diarrhea, or abdominal cramping, almost always, their parasite tests are completely negative. And I think you're right. I think this is just a bad test to make this diagnosis.

[00:54:28] **Dave:** Do you take antiparasitics regularly, herbal or pharmaceutical, just to be on the safe side?

[00:54:33] **Steven:** Well, interesting. Turmeric has some interesting antiparasite qualities, so does berberine. And so I take both of those, nearly constantly. Quercetin also has some antiparasitic properties. So those are useful to help with your armamentarium.

[00:54:59] **Dave:** Can we talk about berberine for a minute?

[00:55:02] **Steven:** Sure.

[00:55:02] **Dave:** All right. So for listeners, berberine's a herb that does something similar to metformin from a longevity perspective, a blood sugar control perspective. Metformin is something that some people in the longevity field have been taking for a while to reduce their speed of aging.

[00:55:21] I started taking it in 2003 when the first study came out and stopped taking it in 2006 because it wasn't working the way it was supposed to work. And I've been generally opposed to it. I've tried it a couple of more times. It reduces mitochondrial function. So I don't think metformin's a good thing. And most people who start metformin and they're big cheerleaders, I'm like, give them three years.

[00:55:37] VO2 max goes down. It's not the right drug. Berberine came online, so of course I'm taking berberine. But I had two episodes of abnormally low, potentially fatal heart rates during times of stress. Down to 30 beats a second, the blood pressure, 60 over 30 kind of things, you can have something called heart lock that you're surely familiar with.

[00:56:02] Yeah, well, do a search on PubMed for berberine and vagal tone and all the other things that are related to heart lock. And what you'll find is that there are many, many, many, even ER reports of people taking berberine, having abnormally low heart rate. It happened to me. And one of the times, I'm lucky I had an EpiPen because it was in the back of an Uber, and it could have been really, really bad.

[00:56:27] That was after our medical procedure. Both of these were. And James Clements, who's been on the show and is another one of those guys in the longevity field, I've known him for 25 years. He's the guy who flew around and gathered DNA from everyone over a 100 so George Church could analyze it.

[00:56:41] James had the same experience with him. We couldn't figure out why our heart rate kept going lower and lower and lower. So berberine is not without risk. And I saw these people just, dihydroxy berberine. I'm doing enemas with it now. It's going to save my life. Guys, it's a double-edged sword.

[00:56:53] All pharmaceuticals are, and so were some of the plant compounds. But I was going to say, with your cardiology background, you come across any of that in yourself or in patients? You ever seen it?

[00:57:03] **Steven:** Luckily, knock on wood, I haven't seen that particular effect of berberine.

[00:57:09] I think some people say, if some is good, a whole lot is a lot better. And there is a slippery slope with supplements, the first to tell people that.

[00:57:20] **Dave:** Got you. So I think you should use it, but if you see your heart rate in your Oura ring are telling you weird stuff, you should pay attention to that. Interesting. Melatonin can do something too. A very high dose melatonin can cause cardiac irregularities. I can see it on my Oura ring when I took 40 milligrams.

[00:57:34] I ended up in the hospital with arrhythmias until 2:00 in the afternoon. Like, oh, I figured that one out. And 40 milligrams of melatonin will reliably do that to me, even though some people take 100 milligrams to deal with cancer. So it's one of those things where you just have to have your own fainting couch, and then you're fine.

[00:57:51] **Steven:** There's now a 60-milligram melatonin tablet that's commercially available.

[00:57:59] **Dave:** Yeah. If I took that, it would be really, really bad. So I would say, if you're going to try that, you should ramp up instead of just--

[00:58:05] **Steven:** That's exactly what I do with my patients. We start slow and work our way up.

[00:58:09] **Dave:** And it's life changing if you can take high doses and you need it. It's a very potent thing. Let's talk about nicotine. I just wanted to hug you when I saw that you put that in Gut Check. People have been yelling at me for years for saying, guys, mitochondrial uncoupling, cognitive benefits, anti-Alzheimer's, nicotine.

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[00:58:27] I interviewed the guy who did the original study in 1986. He's at Vanderbilt University. I call him Dr. Nicotine. He's never tried nicotine, even though he studied it for 30 years, which I find crazy. But I asked him like, what are you using, a gum or a patch? He goes, no, I've never tried it.

[00:58:42] I want my research to be unbiased. And I'm like, that sounds biased against it, but just saying. So what's your take on nicotine and longevity? Tell me what's in the book. I love this. We got to talk about it. Smoking's bad for you. We're not saying it's good for you, but what did you find in your research when you were looking at this is how longevity patterns and blue, not so blue zones.

[00:59:01] **Steven:** Yeah, it's interesting. The vast majority of the blue zones, actually, with the exception of Loma Linda, these are smokers. And what's really interesting is Sardinia makes the case. In as far as I can tell, only the Sardinians who live in the mountainous regions have "longevity".

[00:59:23] The folks who live down by the water don't. The Sardinians who live up in the mountains are sheep and goat herders. The folks who live by sea aren't. But what's really interesting is the thing that makes the mountainous Sardinians interesting, is that the men are smokers. About 95% of the men are smokers, but only about 25% of the women are smokers.

[00:59:52] And what's weird is that the men have the longevity. The women don't. But now men in general live about six to seven years less than women. So it's the men Sardinians who are the smokers who pull up the average. The same thing happens in Achroli. The same thing happens in Ikaria of Greece. It's the male smokers that pull up the averages.

[01:00:21] The same thing was found by Stefan Lindeberg, looking at the Catavins. The Catavins have incredible longevity. What's really unique about them is they all smoke, and there has never been a case of coronary heart disease, stroke, or lung cancer in the Catavins ever. He couldn't find it, and he studied them all his life.

[01:00:46] So you go, wow, this is really interesting. Maybe we're missing something. The famous British doctor study of 60,000 physicians found that the smokers had a 30% less incidence of Parkinson's than the non-smokers. So I am not proposing smoking, but we have to

say, what is it about nicotine, and what is it about these people that prevents the known oxidative stress of smoking? And it's their diet.

[01:01:25] And I got interested in this years ago as a cardiovascular surgeon because back in the good old days, most of the people we operated on for heart disease were smokers. And these people had a unique where their plaques were. They were in the proximal part of the vessel where bends occurred. The rest of their vessels were gorgeous.

[01:01:48] The other thing that was wonderful was they were all skinny. And once you got past where these blockages were, it was perfect. We just had a field day as heart surgeons. Now we see disease all along the blood vessels. And so what was happening with smokers was they used up all their vitamin C and oxidative stress.

[01:02:10] And what's unique about all of these areas where they are active smokers, they have a very high diet in antioxidants, in vitamin C. In fact, olive oil will double your vitamin C levels, just taking olive oil.

[01:02:27] **Dave:** How's that? There's no vitamin C in olive oil. Is there?

[01:02:30] **Steven:** But it actually wakes up that final ghost gene, and so you will actually produce more vitamin C.

[01:02:37] **Dave:** Mm. Oh, I didn't know olive oil wake up our endogenous vitamin C production. That's cool.

[01:02:42] **Steven:** Yeah, it's really cool. So the evil of smoking-- and again, this is the problem. We look at, hey, smoking's bad for you. Let's all agree. But is there a way to get the benefit of nicotine and stop the bad things? It's like when we look at grains and beans? Oh, that's associated with longevity. Well, wait a minute. Are we sure? Maybe it's the smoking that was the benefit and the grains and beans were a negative aspect. And I spent a whole chapter.

[01:03:17] **Dave:** Yeah, I loved it that you did that. It's really ballsy because it's politically incorrect to talk about that. I actually went out to Switzerland and visited with the senior science team at Philip Morris a few years ago. They're called PMI now. These guys had so much longevity research around mitochondrial function.

[01:03:36] We went so deep on a whiteboard, and it was incredible. I said, guys, maybe we should be talking about this. Oh, no, no, no. Our job as a company is to reduce cigarette smoking. I'm like, last time I looked, you guys were selling this. But it's attorney-induced schizophrenia.

[01:03:57] We're like, okay, we're going to sell tobacco, but our job is to not sell tobacco. But I'm thinking maybe we could take out all the chemicals. Maybe we could find a way to get the right dose, but there's a dark side to nicotine, apart from tobacco as well, having to do with vascular health.

[01:04:13] If you get too much nicotine, it's linked to reductions in hair and erectile dysfunction because it messes with the glycocalyx and with the effective nitric oxide in the arteries. So there's a Goldilocks Zone for nicotine apparently. How do we know what's the right amount of nicotine?

[01:04:34] **Steven:** I guess that that is the 64,000-dollar question, is the nicotine effect. For instance, where these breaks occur, collagen's exposed. And normally, vitamin C, [Inaudible] collagen, and nicotine smoking uses up all your vitamin C. It's gone. That's why that famous study looking at vitamin E and causing lung cancer in smokers, they didn't control for the fact that vitamin C has to reconstitute vitamin E once it gets oxidized.

[01:05:08] If they had controlled for that, they would've found actually that vitamin E was pretty good for you. But without vitamin C, to reconstitute it was useless. Same way with glutathione. Glutathione has to be reconstituted by vitamin C. So these smokers all had virtually no vitamin C in their diet.

[01:05:29] And that's where a lot of the problem came from. So the glycocalyx was disrupted but couldn't be repaired. So again, we're looking at the wrong thing. Years ago, there was a study called Aim High where statin drugs were combined with niacin. Why would you do that? Because you could patent the combination.

[01:05:52] **Dave:** Shocking.

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[01:05:53] **Steven:** Yeah. And you can't patent niacin, but you could patent the combination. And the study basically failed when I was the invite and discussant on why it failed. And it turns out the niacin wasn't bad for you. But niacin had a few side effects. Niacin is nicotinic acid.

[01:06:11] It raised homocysteine. It actually increased the stickiness of blood vessels, the glycocalyx. But if you gave people TMG, methyl B12, methyl folate, and gave them `polyphenols in the form of grape seed extract, then you could negate those negative effects of niacin. And of course, nobody bothered to do that. So the trial was a failure.

[01:06:40] **Dave:** It's funny how we like to look for a single thing. It's big pharmas. We want the one cause. And a guy walks into the doctor's office. He is got a tack in three fingers, so my hand hurts. So they pull out one tack, and I went that one, put it back, take out the next one, and it doesn't go away. Same thing.

[01:06:57] What's the cause of bread? Is it the water, the flour, the salt, or the yeast? It's all of them. So these studies where they're trying to implicate one thing, they seem wrongheaded because the core assumptions that it was just one thing. And it's an unproven assumption that's around almost everything that big pharma's ever done.

[01:07:14] How do we get around that way of thinking where, oh, it's a system? Do you have any good advice for people just how to think about the problem differently?

[01:07:20] **Steven:** Well, again, when I talk about in Gut Check, surprise, surprise, these serotonin reuptake inhibitors, the antidepressants, lo and behold work by changing the microbiome, not because of any direct effect on serotonin reuptake. It totally changes the microbiome. We've always been one step removed from the action of these drugs.

[01:07:48] Metformin, people knew for a long time that about 30% of people who were given metformin, got diarrhea, got stuck and got GI up step. Sometimes impressive. It's because metformin changes the microbiome. Now, luckily, for the most part, it changes it for the better, makes more akkermansia.

[01:08:09] But about 30% of people, and I have a number of those patients in my practice who can't tolerate metformin because of the GI issues. And who would've guessed without the human

microbiome project that metformin's mechanism of action, among other things, was manipulation of the gut microbiome?

[01:08:29] **Dave:** Seems like a lot of pharmaceuticals actually are metabolized by the gut way more than--

[01:08:34] **Steven:** Oh yeah. Almost every one of these. You start looking at where it happens. For instance, niacin, nicotinic acid does some incredibly cool things to the gut microbiome, but it's delivery device, you've got to get it down into the colon to where it's really going to work. And most niacin is absorbed before that. So there you go.

[01:08:59] **Dave:** We talked about olive oil and one of its benefits. There's a downside to too much olive oil, isn't there?

[01:09:06] **Steven:** Depends on how you define too much. The PREDIMED study force people to use a liter of olive oil every week. That's 10 to 12 tablespoons a day. One has to remember that many lipopolysaccharides hop on oil carriers called chylomicrons to get through the wall of the gut. And so even olive oil potentially can raise LPS levels in the body, which I don't think is a good thing.

[01:09:41] Interestingly enough, in the Plant Paradox, people didn't realize it, but for two weeks, when we started anybody's program, we eliminated olive oil and other fats from the diet for two weeks because of that problem. But I think the only purpose of food is to get olive oil into your mouth.

[01:10:03] **Dave:** I'm a fan of olive oil. I worry about the amount of 16% linoleic acid that's in it. It's got enough that I wouldn't want to replace all my oil with it. So I use a tablespoon or two in salads. So I've seen some things around how having enough linoleic acid increases all sorts of negative things in your cells.

[01:10:27] And I actually talked with Bryan Johnson about this a little bit too. So I'm trying to figure out the sweet spot. Recognizing there's hydroxytyrosol. There's all kinds of good stuff that's in olive oil, and it is definitely metabolically slowing compared to things like steric acid.

[01:10:43] So I think at some point, we're going to look at your genes and maybe your gut bacteria, and we're going to figure out for you, you need a half a cup. And for you, you need a

tablespoon. We're going to get to that level of customization to figure out, all right, what are the types of chains of fats that are going to be perfect for you?

[01:11:00] And in the meantime I've gone from-- there's times where I was doing only olive oil to times where I'm primarily saturated, and I decorate with olive oil for flavor and antioxidant benefits and metabolic benefits, but I don't go all in on it. And I don't know the right answer to that. I'm wondering

[01:11:18] **Steven:** Well, I'm a huge fan of perilla oil, which is almost pure linolenic acid, short chain omega-3.

[01:11:27] **Dave:** Linolenic, not linoleic. Big difference.

[01:11:29] **Steven:** Yes, linolenic. Correct. The omega-3, not the omega-6. It's almost pure linolenic acid. And I use about half perilla oil and half olive oil in my salad dressings. Anyone who has anti-LPS antibodies in or a lot in my practice, I take away all their oils except sesame and perilla oil, and we've seen dramatic reductions in anti-LPS's. So there you go.

[01:11:59] **Dave:** Very cool.

[01:11:59] **Steven:** So number one oil of Korea, by the way.

[01:12:01] **Dave:** Is perilla?

[01:12:02] **Steven:** Perilla. Number one oil.

[01:12:03] **Dave:** Interesting. Very, very cool. I'm always interested in ratios of fats. And it's to the point now where when someone says, how much protein do you get? I'm like, I don't care. Because gluten's a protein. So if you're talking about gluten versus eggs, they're not protein schmotin.

[01:12:21] And the same thing for fats. Oh, how much canola oil did you get? Or how much olive oil? They're not the same. So tracking your macros, it seems like an act of masturbation. It feels good, but nothing productive happens in the end. You're not reproducing here.

[01:12:38] Okay, let's take on calories. I know we're run up on the end of the interview, but it feels like you don't never even know how many calories are consumed to get the calories out of the food. So I've just found--

[01:12:48] **Steven:** Oh yeah. It's a complete waste of time. What you really want to do and might talk about in Gut Check, feed your bacteria what they want to eat, and they'll take care of everything else. If you give them most of the calories they want, there won't be any calories for you to worry about.

[01:13:06] **Dave:** And there's this strange thing called hunger that directs how much you should eat. And it's not a scale. So I see people get results from tracking, and what I think they're doing is they're just becoming aware. I did this many years ago, but I do not care about how many calories I eat. I care about how I feel. And funny, I'm 7% body fat. And in fact, sometimes I eat more calories than I really want because I just don't want to get leaner. So that's a working metabolism as far as I can tell.

[01:13:35] Dr. Gundry, new book, Gut Check, like all of your work, it's got good research. It's got new ideas, and that's one of the reasons you're on the show a lot. A lot of others don't write books with new stuff. They just rewrite stuff that's out there.

[01:13:49] You and I have that same value. I don't want to spend a minute of my time writing something that I could just have someone on the show to talk about. It's just easier that way. So thanks for writing books with new stuff and controversial stuff. Talking about being pro nicotine, even a little bit, is a bit controversial, but good for you.

[01:14:03] And I'm fully with you there because it matters, and the number of people whose lives could be benefited because they're starting to get Alzheimer's and they could get a little bit-- we got to talk about this, and you're willing to do it. So tons of respect. Book is Gut Check, and you guys should check it out.

[01:14:21] **Steven:** Oh, I appreciate. Thanks, Dave. Always good to see you.