Dave Asprey (00:00:00):

You are listening to the Human Upgrade with Dave Asprey. Today's interview is the fourth appearance of a friend of the show, Dr. Kate Shanahan, who first came on, believe it or not, 10 years ago in 2014, and she's been on in 2017 and 2020, so she's actually a year overdue for this appearance. She's a well-known Cornell trained physician scientist, and she's just inspired movements including bone broth, live culture ferments. And she and I have been in violent agreement on the evils of seed oils for this entire time, and she's been one of the leading voices on that. The last time in 2017 when we chatted, she had transformed the Lakers so that they more fat and then strangely they performed better, but I guess no one actually tested the combination of fat and exercise. So more research is needed before you do anything. The reason I said that before the show started, a BC Nightline just did a major piece on me, came to my house and filmed for like 14 hours and talked about biohacking, but as they do in every journalistic piece, there always has to be a couple of skeptics. So they found someone who said, it's not fair if people live forever. And another guy said, well, the supplements have never been tested in combination. Meanwhile, he's recommending things that also haven't been tested in combination with things like seed oils, maybe exercise with canola oil is bad for you, and exercise without canola oil is good for you. Who's run those tests? Well, maybe Kate has. Why don't we ask her? Kate, welcome to the show.

Dr. Cate Shanahan (00:01:46):

Hi, Dave. Thank you so much for having me back on. Yeah, one of the things that you said in the intro that struck my funny bone in a bad way was what if some people are healthier than others or it's not fair that some people might become healthier than others. We're already way past that with some people being healthier than others because some people live in food deserts and food deserts are flooded with vegetable oils. Oh my gosh. And we have all these statistics about the map. We can see the obesity map of the United States becoming more red in the states where more people live more in those food deserts and consume more of the vegetable oil that totally destroys our metabolism.

Dave Asprey (00:02:34):

I wonder what bioethicists think about that when they're saying it's not fair that some people might use biohacking. We'd have haves and haves not have nots, and your point, we already have halves and have nots, and it's controlled by the quality of diet, which is controlled in large part by poverty

Dr. Cate Shanahan (00:02:52):

In a lot of ways. Now, the one thing about vegetable oil that's unique is that because, well, I call the book Dark Calories because doctors don't learn about these things. Doctors do not learn very much at all about what vegetable oils are, and they learn almost nothing about the fact that they can make us sick. And that has to do with how doctors are miseducated in why we used to think or a lot of people still think that they're heart healthy. And so the problem is that because the world's top doctors at places like Stanford and Harvard are promoting these things as healthy, when people may come down with a cancer or heaven forbid, or if they have a serious problem, even the wealthiest of the wealthy are going to be treated in a system that encourages more of these vegetable oils and less of the actually healthy fats that their bodies need. So it affects everyone, but it is disproportionate in the people who have less access to the better foods.

Dave Asprey (00:04:01):

It's kind of weird though amongst the ultra wealthy, and you and I have both spent time with pro athletes and a-list celebrities and hedge fund managers. I spent a lot of time actually working with people in those kinds of professions who can do whatever they want. They could eat an entire cricket diet from fresh crickets imported from Guatemala if they wanted to. Like anything is on the menu. And you have some of them who look a lot kind of like Bill Gates. They have a doy midsection man boobs and this gray palor, and they're like, well, I decided to be vegan, and I'm on a bunch of statins the way Peter Atia said, and I'm trying to exercise, but every time I do it, I get injured, which is weird kind of what not having enough cholesterol to make some membranes can do. And then there's another group that looks really healthy and they're like, yeah, I see a bunch of different doctors.

(00:04:59):

I do biohacking and yes, I eat butter. And they're the ones loading up on sick and they look like they're doing triathlons, but they're probably not because busy. So you can just see the difference in energy levels. And I don't really care if someone says, I have 15 studies that say what I'm doing works. I'm like, dude, your metrics say that you're screwing up because you're weak and you're aging quickly. And I don't know how we break the myth. How do people get stuck in that? I heard canola oil was healthy, my doctor said it was healthy, so I'm doing it and everything sucks, but I'm going to keep doing it. That was me when I was in my early twenties. How did you break out of it just personally?

Dr. Cate Shanahan (00:05:42):

Well, I really wanted to know what was the root cause of my patients' health problems. I was hoping that that's what I would've been taught in medical school. But when I graduated, I am a family practice doctor, and so I was practicing primary care, and that's a lot of well-child visits and acute care. But increasingly, I'd say about a third of my practice was refueling prescriptions for people who were on medications chronically. And at some point I noticed that people were coming in for especially their blood pressure medications and my nurse would say, oh, your blood pressure's high. And so they would know my blood pressure's high, and then I would come in the room and the first thing they would do is be apologize for having high blood pressure. And I'd be like, oh, well no, that's all right. It's not your fault, it's your body.

(00:06:39):

And they would say, well, I didn't take my medications, so I'd ask why not? And they would invariably say, I didn't feel any better while I was taking my drugs. And to that, that's where I started. My mind started going, I can't invalidate that. But at the same time, I had the script because I had gone to all the continuing medical education conferences that kind of prime us to deal with that. We had actually a term hypertension, the silent killer, you don't have symptoms, so you don't expect the drugs to make you feel better silent in the first place. You don't notice it when your blood pressure goes down. And so they'll tolerate it even if those blood pressure drugs are making you tired. And so I started feeling like, what am I even doing here? I'm not making a difference. I went to medical school to make a difference and I was starting to feel like I was lying to people and I had no idea what to do about it. I knew I was missing something. I didn't know where to start looking. But all that changed when I myself got really sick and my husband kind of pointed out that my diet was terrible. I had a terrible sweet tooth and I was putting a cup of sugar in my coffee every morning. And he thought, that might not be great. And I really resisted that. He'd been telling me that for years. But as a medical professional, I was like, well, I never heard that sugar was particularly bad for you.

(00:08:17):

I would've heard, so I'm not overweight and so I don't have a problem. But when I got really sick, I literally couldn't walk. So I had nothing really to do other than read this book that he plopped on my lap.

And in that book I learned about vegetable oils. I knew what vegetable oil was, but I learned that they had different compounds in them then just fat. I never really thought about what fat was made out of. Even though before medical school I was a biochemist and I knew about different fatty acids, I could draw the molecules out. So I was intrigued because this kind of put the two halves of my life together. I spent a lot of years studying biochemistry, but it didn't really get applied to anything that I learned in medical school or how to make people healthy. And so that was how I started bringing those two hops of my life together.

(00:09:15):

When I started looking into what was vegetable oil even made out of, and very soon after I saw the chemical formula, I was like, this could be a problem because of the fact that it's got these two double bonds here, and I know that those react with oxygen. And I also knew that something called oxidative stress was being discovered as the root cause of a whole bunch of these medical problems that doctors didn't have other explanations for that we call them idiopathic and hypertension was one of 'em. So that was how it started coming together for me. And that was the beginning of these things are something I need to know more about. And ultimately, after a couple of years, it took a long time for me to overturn my miseducation around fats. And ultimately when I did, I was actually able to finally change people's lives in a positive way in this way that it was the whole reason I went to medical school.

(00:10:24):

People come back and they would say, oh my gosh, I love it. I love that I'm able to use butter or that I'm able to use. A lot of people hunted there, so they rendered their own pig fat. They were very, this was Hawaii. I lived in Hawaii. They were very knowledgeable about cooking and very connected to their culinary roots. And so by me telling them that the things that were part of their heritage were healthy, they loved that. And so it was just a win-win all around and I started getting people off medications. It helped me too. So that was the beginning of it.

Dave Asprey (00:11:10):

That's how you got going on it. And you see the sustained changes. I've been not eating seed oils for 15 years. I mean very carefully avoiding them. I don't eat a chip for a lot of reasons, but I just don't do it. And I haven't had commercial salad dressing in forever. Good. I guess the last time I had it, I didn't realize that when I ate a, you ever heard of a docent?

Dr. Cate Shanahan (00:11:35):

I've heard of a do scent.

Dave Asprey (00:11:37):

So a do scent is a croissant that apparently is then fried like a donut. And I was at Herod's in London. I can handle European gluten if I take enzymes. So I'm like, I'm going to do that. And I just didn't know it was cooked in bad oils. So I did eat three of those knowing full well that they had carbs and would spike my blood sugar and not really caring, but I was like, wait, hold on, these are too good. And then I realized it wasn't butter in those because it had that stuff. But other than that, I've had no aceto oils in 15 years. It just doesn't happen.

Dr. Cate Shanahan (00:12:08):

Amazing.

Dave Asprey (00:12:09):

The difference though, after two years of no seed oils and putting lots of butter in my coffee, everyone knows about Bulletproof Coffee now, by the way. It's danger coffee on my new coffee brand. Well, after two years you stop craving butter like you're going to die without it. And the half-life of fat in your cell membranes is about two years. And after four years, you got 75% healthy fat in your membranes and all of a sudden you're like, butter's cool, but it's not like the thing that saves me every day. And then you end up in this sort of just feeling really good and strangely for me, I can tolerate carbs better than anytime in my life. I ate two hundreds of carbs a day. Blood sugar doesn't go up. It's amazing. I'm not eating candy, I'm eating mostly white rice because having some Sarge works and plus if you're six and a half percent body fat, going full keto all the time is probably not a good idea. So I don't need to do it, but holy crap, to go from 300 pounds to that from avoiding seed oils. That's cool. Now you and I have stack rank lists of bad oils, and you talk about the hateful eight oils. What are the hateful eight oils?

Dr. Cate Shanahan (00:13:17):

So the Hateful eight are the ones that we want to avoid, and they are, I'll just list them off first, corn, canola, cotton seed, soy, sunflower, safflower, rice bran, and grape seed. Now you brought it up. So do you have different oils on your bad oil list? Because I'm curious how they got there. I

Dave Asprey (00:13:37):

Want to add first, what is the worst oil of the hate valet?

Dr. Cate Shanahan (00:13:41):

Oh, well, they're all very similar chemically, but the best one is a little bit easier to answer. Actually, the best of the worst is possibly sunflower because of the fact that it had been cultivated and used a little bit for oil in certain areas. And that makes a big difference to the crude oil and how extensively damaged it gets during the refining process. So sunflower oil is probably one of the better ones, but the rest of them, their chemical makeup is very similar and the crude oil is roughly easily toxic. So part of how I answered the question is what does the crude oil look like and then where does it go from there? It only goes down from the crude oil. And I've spoken to a couple people inside the industry and they say that in terms of the quality between all of them, all the eight hateful eight, really what matters in their minds is the harvest is harvesting factors and how well they were kept before they were extracted, which is information that we just don't have that nobody keeps.

(00:15:05):

No one will tell us that, but otherwise, so that's why the testing, that's why it's so important that they have oil scientists constantly in the factory because every batch can be different and every batch will have different challenges and different solutions to clean up the crude oil and the crow oil is very nasty because in order to get oil from these seeds, which were never bred to be oil seeds with the slight exception of sunflower, they have to be pummeled with 400 to 600 degrees Fahrenheit temperatures and insane pressures, and then sometimes even solvents like hexane. And it's just a total mess. What the liquid is, that is the crude oil and it is inedible and it is toxic, and it's a weird loophole that enables these oils to be considered organic unless they use hexane because they're toxic in they're crude states. A

Dave Asprey (00:16:09):

Lot of organic stuff is toxic. I mean, if I go into my backyard and start eating organic plants back there, most of them are going to seriously disable me, if not kill me outright. So organic cotton or organic

cotton mouth juice from cotton mouth snakes is also deadly. So I feel like plant-based, animal-based organic, it doesn't mean anything except organic means that it doesn't have certain chemicals in it.

Dr. Cate Shanahan (00:16:33):

Added, yeah,

Dave Asprey (00:16:34):

Yeah, added, but they can still be there.

Dr. Cate Shanahan (00:16:36):

That's the key difference. So you're bringing up a really good point because certainly natural and organic natural is organic technically, but the label is all about did you add any hazardous materials during the processing? That's it. And so if you didn't add any hazardous materials, you're off the hook even when the processing itself creates extraordinarily hazardous materials that are probably equally as bad as hexane, if not worse in some cases.

Dave Asprey (00:17:09):

I wonder if there's some kind of lawsuit against the Organic standard Association because if you're not allowed to add toxic substances and they're adding canola oil, which itself is a toxic substance, they violating the organic standards.

Dr. Cate Shanahan (00:17:23):

Well that comes down to how did you define hazardous material? And so that's such a good point because once you know what it's made of and what it does to your body, you start thinking of it, of course is a hazardous material, but it comes down to what is listed as a hazardous material by the organizations define these things. And because vegetable oils were created long before there were any food standards and sold to the public long before there was any sort of testing whatsoever back in the early 19 hundreds, it was just basically grandfathered in as under the term grass, which means generally regarded as safe. So that is a great point. I would love somebody to start a lawsuit, but if I was going to sue somebody, I don't know that it would be the edible oil industry. I would prefer to go after the folks who we look up to for health advice. Nobody looks to the processed food industry for advice on what to eat. They look to the processed food industry for fast, cheap solutions. But people do look to their doctors and the doctors and when it comes to nutrition, doctors and dieticians look to the American Heart Association and in dark calories, I have an entire section devoted to the American Heart Association's origin story.

Dave Asprey (00:19:07):

Tell us.

Dr. Cate Shanahan (00:19:07):

Yeah, because it's entangled with the vegetable oil industry. And this is something that cardiologists don't know and doctors don't know, dieticians don't know. And all these influencers out there who are now, there's a lot of people debunking the whole idea that vegetable oil is bad. They just have no idea that the only reason we're eating them is because of some pretty dark dealings that happened between the American Heart Association and Proctor and Gamble in 1948.

Dave Asprey (00:19:43):

That was before the big tobacco companies bought all the processed food companies in what the nineties they did that. So people dunno this, but most of them are owned by big tobacco. And big tobacco is really good at getting doctors to tell you something bad for you is good for you. So what does surprise that they would do that? And it's not that the doctors are knowingly doing this in most cases. I mean high levels I think possibly, but most of 'em, it's just that's what they learned in school. And of course you're going to believe it. It was taught to you by the teachers and it's doctors like you who look around and to your point, the dieticians, I love it when a dietician troll comes on high and mighty on social media and tries to says something. I'm like, hold on a second.

(00:20:26):

Your profession created hospital meals and school lunches. You don't have a leg to stand on, get a certification that matters because your registered dietician actually means you don't know how to eat and you look like it. And that said, I'm seeing an emergence of functional dieticians who went through the training, threw up on it or probably in class from eating what they were told to eat and then became functional dieticians and they're actually fighting against the profession. In fact, one of 'em works for me. And it's really cool to see even the most toxic of those types of professions, there are people moving it towards this idea that it doesn't matter what the studies say, if you do it and it makes you miserable and gives you cancer and diabetes and heart disease, don't do it anymore. Right? Maybe the studies are paid for by someone evil. And that's usually what happens.

Dr. Cate Shanahan (00:21:18):

I mean, this is so true. No one is asking who is educating the health professionals? And one of the things that really bothered me as a young doctor was just lack of interest in questioning the standards that we believed in. I remember one time I was at a conference on breast cancer and I asked the surgeon who was a breast surgery specialist, what do we know about the natural course of breast cancer if we don't do a mastectomy? What happens if we don't do any treatment? How long does it take before these things metastasize? And he said, that's a really good question to his credit, but he didn't have a clue. And how can you say that you need to do any terrifically disfiguring procedure or any procedure without questioning the natural history of a disease? And that gets back to the failure of the medical system to really progress at all, much at all in the past 2000 years. And what I'm talking about is the root cause question. So you may be familiar, Dave, with a guy named Denim Harmon, and if that name probably ring a bell, he is really the father of free radical biology, right?

Dave Asprey (00:22:50):

Yeah. Old research, right?

Dr. Cate Shanahan (00:22:51):

Yes. And actually he published a paper in the 1950s that sparked off the entire field of free radical biology, which has recently, in recent years given also rise to the anti-aging movement and is somewhat obliquely related to, well, you probably know about it because the whole biohacking movement, which I believe you have some relationship to that. Yeah,

Dave Asprey (00:23:21):

I kind of started that thing back in the day.

Dr. Cate Shanahan (00:23:25):

So this guy, denim Harmon, he asked a really important question, which is, Hey, why do we die? A really important question. He couldn't answer it, but he was fascinated with it. And so he went to medical, he was a chemist. He thought the answer had something to do with, but he didn't know enough about the body. So he went to medical school to learn about the body and he graduated and he assigned himself, he found himself as cush jab where he sat around and basically had to press a button a few times a day so he could think. And that's what he did. He was like a theoretical physician. You know how there's theoretical physicists who think about the origin of the universe? Well, he was like a theoretical physician who thought about the origin of death. And after a few months he realized, I think it begins at the cell in the cell, shocking probably in the mitochondria.

(00:24:21):

Who would've thought, right? Well, he didn't focus on the mitochondria. I don't think he knew about them back then. They hadn't really been. I know, I dunno, that doctors hadn't been discovered. Doctors learn much about them. But then the next thing he did, and I'm paraphrasing here, is said, he realized if you want to know the root cause of sickness and death, you follow the free radical. Because at the chemical level, that is where our cells, these highly intelligent, highly organized little bags of chemicals that have city level of complexity inside them, they are all run by chemicals. Chemicals just following thermodynamics. And you throw free radicals in there and you throw everything off. It's impossible. So that's what throws off the system. And free radicals come from oxidative stress. And the number one source of oxidative stress in any cell with a mitochondria is the mitochondria.

(00:25:21):

Because mitochondria produce energy and it's like an engine. It's literally very similar to engines. It's amazing construction. And it actually has a little teeny tiny turbine like thing in there that makes the A TP for us recharges our A TP batteries. But like engines in our cars, it has a byproduct. And in our car, the byproduct is heat, right? So it's not a hundred percent efficient. Mitochondria aren't a hundred percent efficient either. Their byproduct are free radicals, which generate oxidative stress. And keeping that oxidative stress under control is so essential to life and health that our bodies have. The fastest enzymes in the body are designed to control free radicals, though we call them antioxidants. And some of those like superoxide dismutase catalyst, they're the fastest in the mammalian world, the fastest enzymes, possibly even the fastest enzymes known to science because controlling free radicals is that important and that central to health.

(00:26:36):

But one thing that he didn't know, aside from not knowing too much about mitochondria is that we were eating foods that kill our mitochondria. And in so doing make them generate free radicals, well, they make 'em generate free radicals first. I had that out of order. And then when they do that, they start to cause mitochondrial dysfunction and ultimately can kill them. And so that lack of paying attention to vegetable oil, which again why I call it dark calories, I like that name happened to have one. I just got them the other day because he didn't know about vegetable oils at the time, they were less prevalent in the food supply, but people were still eating a couple pounds a year. But because of not understanding that vegetable oils cause mitochondria to start shooting out free radicals and promote oxidative stress, the science of free radical biology never really made any huge inroads into its whole goal, which was extending life, right? The whole science has thrown all kinds of antioxidants at the problem of oxidative stress over the years, and it's not really added up to extending life because the first, what's more important than throwing antioxidants into a broken system is to unbreak the system. And the only way to do that is get rid of the worst foods in our food supply, which are these vegetable oils.

Dave Asprey (00:28:15):

Okay,

Dr. Cate Shanahan (00:28:16):

Are you with me?

Dave Asprey (00:28:17):

I'm with you. You mentioned the hateful eight and I've been trying to figure it out. I think I have the nasty nine.

Dr. Cate Shanahan (00:28:25):

You added another one.

Dave Asprey (00:28:26):

I added another one.

Dr. Cate Shanahan (00:28:28):

I bet it was peanut,

Dave Asprey (00:28:28):

It was peanuts. And I was also looking at how would I pick the worst ones? Well, when you're concentrating these oils, there's how much glyphosate are you going to get? And Stephanie EF has been on the show a couple of times talking about the dangers of glyphosate along with Dr. Mercola and many others. Glyphosate's clearly bad for us, but what a lot of people miss out on is mycotoxins these toxins from mold. And people say, Dave, you're obsessed with those. I'm like, that's weird because governments around the world are obsessed with them because they keep putting regulations in place because it makes people sick and it gives 'em cancer. So these are things that form in the field while things are growing or during storage, before they make it into oil. And there are studies, lots of them showing that they make it into the final product.

(00:29:21):

And peanut oil aflatoxin, the most cancer-causing compound we know of is present in peanut oil. And peanut oil unfortunately also has very long chain fatty acids, which are a different problem than the omega sixes that you and I are focused on. But the VL CFAs are so long they don't fit in cell membranes. When they get in there, they kind of turn sideways and clog up the cell membrane and they're overrepresented in Alzheimer's brains. So why you would ever fry something in peanut oil? I don't know. It's just a bad idea. And the other two that are particularly bad, especially with toxins from manmade glyphosate as well as from mold would be corn and soy. And believe it or not, there are mycotoxin maps published every quarter about which species of mold is most prevalent in which region and how contaminated the crops are that year.

(00:30:16):

So this is something that agricultural people will trace, but you are not going to know when you get your canola what's in there. But you can guarantee glyphosate, you can guarantee that there's going to be some amount of mold, but you don't know what it is and it can change. So what I would say there is don't eat any of those things or peanut oil and you've got a pretty safe list. But if those are the nasty

nine or the hateful eight, what are the super six or, I have no idea. I'm just making up words that kind of sound good. But what are the six best oils you think people should eat?

Dr. Cate Shanahan (00:30:50):

Well, yeah, sure. First though I want to say I did take a lot of that into consideration when I decided to exclude peanut oil. And a lot of it comes down to the fact that, so first of all, it comes down to the simple axiom toxicology, which is the dose makes the poison. And what happens with these other toxins that are environmental contaminants, and I'm throwing the mycotoxins in there, it's part of the category of environmental contaminants. A lot of them are removed, and yes, of course they can't remove all of them. You can't really purify something fully, but they're present in parts per million or parts per billion. The problem with the hateful eight is that when they leave the factory, there are toxins that are present in them in parts per hundred, which is what is that 10,000, a thousand times higher, 10,000 times higher, and the dose makes the poison.

(00:31:55):

And then that's just the beginning of the story. So what happens next is it's exposed to light, you get a few more, you open the bottle, more oxygen in there, you get more toxins forming, and then when you cook with it, you get a whole heck of a lot more toxins forming. And this is true, the cooking forms toxins in the same principle as a burn on your skin. It's time and temperature. So the longer you cook it and the higher temperature, the more toxins will form. And if you reheat it, again, more toxins form, right? So to me, the most important factors to be paying attention to are the oxidation reactions. It's reactions that promote oxidative stress, which is the root cause of death and dying and every disease that you can name. And in overlooking that single most important root cause, medical science has opened the door for just a lot of confusion for folks.

(00:33:01):

And I just want to make things as simple as possible and hierarchize those. So yes, it's absolutely important to avoid glyphosate and avoid the mycotoxins. A hundred percent agree. But I like to hierarchize for those people who just need to know, especially for those people who just need to know where to start or what is the first most important thing. Because having worked with thousands of patients, I know how overwhelming it can be when they hear all of these things that are true, but they don't get told what to do first and have it be made clear for them so that they don't get overwhelmed and just give up. And that's what I have seen happening if it's not made clear. So I want to share that with you so that you understand my rationale for defining the eight and then having, it's really not to say that these other factors don't matter.

Dave Asprey (00:34:10):

I share your pain in that. I went through and stack ranked oils and proteins and carbs according to a whole bunch of different factors, and put that on the Bulletproof Diet roadmap. People still download it every day. It's dave asprey.com/roadmap. But the amount of times when you're like, that's an edge case, you can make a case. For me, peanut oil would fall on the bad ones because it's 36% omega six, so it's going to break down with a third as many of the heavy toxins that you would get from canola or something. But if you look at things like pork fat, it's only 10% omega six. So I'm like, I go for low omega six oils, but if I had to eat, if we had the nasty nine that included peanut oil and I looked at all that crap, I think peanut oil would be slightly better than the other ones. But I don't know that I would intentionally add it to my food. So I am with you there. These corner cases, there's no way to definitively say good or bad, just like it's sort of for me, eventually it became a green, yellow, red, and I would've put peanut in the low yellow, high red, and it wouldn't have been green.

Dr. Cate Shanahan (00:35:16):

I think we also need to clarify if we're talking about refined or unrefined peanut oil, a totally different scenario. Fair point, because there's lower grades of olive oil that I wouldn't want to eat either. Good point. And so when I'm seeing the hateful eight and peanut oils not made the list, I'm only talking about the unrefined peanut oil that is that top quality peanut oil that has all those antioxidants and has the ability to withstand the kind of cooking that I recommend using it for. I wouldn't recommend throwing it in the deep fryer. I used to recommend that, and I've changed my mind in my latest book.

Dave Asprey (00:35:57):

Okay, cool. So olive oil and peanut oil I think are terrible frying oils, but if you wanted to pour some on a salad, if it's unrefined peanut oil and you're not allergic to lectins, okay, it's probably not that harmful. I'm totally with you there.

Dr. Cate Shanahan (00:36:11):

Yeah. And then the other thing is that even the canola oil, a lot of folks get sucked into the whole Omega-3. Let's talk about that ratio. So Omega actually has more double bonds than omega six. The name has only to do with the position of the first double bond at the end of the chain. So it doesn't tell you anything about the number of double bonds or stability. So it turns out that having three double bonds in an 18 carbon fatty acid instead of two makes it at least twice as likely to produce toxins. And in some conditions, and we're talking about everything matters here, pH matters, the salt content matters, the iron content matters. So in some conditions it's 10 times as likely to turn into toxin. So the amount of the Omega-3, which is called linolenic acid in canola oil, is actually worth at least double that in terms of toxicity as the omega six.

(00:37:28):

And so I think some of this conversation has gotten strayed from the root cause, not our conversation Dave, but the conversation around seed oils. So it is strayed from the root cause. The root cause of the problem is the reactions with oxidation. And when I say strayed, I mean it's gone into other territories that have to do with metabolism. And that's where the omega six question comes up. And I don't like, I've not focused on omega six as being problematic, but I want to raise the argument for it, which I'm sure you brought up, is that it's metabolized into an ICOs andoid, which has pro-inflammatory effects as opposed to the Omega-3, which is metabolized into an ICOs andoid that has anti-inflammatory effects. But the key to why it's not much of an issue is the fact that our cells have to metabolize it and our cells will only do so under certain conditions. It's highly regulated cells or control freaks. So it's not like it happened, we eat this stuff and then all of a sudden we produce all these eicosanoids. It's nothing like that. And so the conversation out there on the web that linoleic acid is pro-inflammatory that has taken that turn. I want to set the record straight on that because it is making it so easy for the American Heart Association to come out and debunk that, right? Because it's actually debunk able, I wouldn't rest my case on that one, that

Dave Asprey (00:39:05):

Omega sixes are bad or

Dr. Cate Shanahan (00:39:07):

That linoleic acid is inflammatory because of its ICOs andoid effects, which is kind of what people, when they talk about omega six as if it's more of a problem than Omega-3, I think that must be what they're talking about because Omega actually oxidizes more easily. So to talk about seed oils as being

unhealthy, we have to reframe the conversation and refocus on oxidation. And that's why I wrote dark calories. One of the reasons, because that's what I do in the first four chapters is the very first chapter, actually I focus it right on. We got to be focusing on the oxidation and the reaction with oxygen because that is where the toxins come from, and that's where all of the toxicity and the downstream metabolic effects come from that not from the simple fact of it contains linoleic acid. So now you seem like maybe you disagree with that, so tell me.

Dave Asprey (00:40:08):

No, I agree. I was just going to say, one of the things I hear over and over from angry vegans, guys, I'm the devout vegan, a devout raw vegan, and I was angry too, and it's okay if you're listening to this, thank you for just being curious. I'm not judging you, especially if you're calm. And by the way, I want to know how you did it. They'd say, but plant have omega threes. And then you say, yes, but your body converts them at a ratio of 45 to one into the kind of omega threes that your body needs that EPA and DHA. And it only does that if it has the right minerals and co-factors and enzymes in your metabolism is working and it's not working because you eat too many omega threes and probably some sixes because an excess of six creates oxidation as well, even if it makes good OIDs. And guys, if you don't know what eicosanoids are, the late great Barry Sears wrote a whole series of books in the nineties and early two thousands about different fats and OIDs and signaling, and that was, I think I would give him credit for introducing that concept to the broader community. So what do you think about that vegan omega conversion ratio? That whole argument,

Dr. Cate Shanahan (00:41:20):

If I understand it, I just want to make sure that I've gotten what you said correctly and what they said. If we're on the same page about what they're saying, basically they're saying that too much of omega six blocks the conversion because it's the same enzyme that elongates omega sixes and omega threes, and we don't get enough long chain omega threes. Is that what

Dave Asprey (00:41:44):

They're just saying? I don't need to eat animal-based omega threes because my body will make them from plant-based omega threes, but they don't talk about the 45 grams of plant-based omega threes to yield one gram of quality omega threes. Your body needs the EPA and DHA. So the other 44 grams wreak metabolic havoc, but they don't mention that. So you could, as you go to one of the vegan restaurants, and there are many where everything's fried in canola oil, they're like, yay, it was vegan. It must be good for me. I've done all these things and it's just not, and that Omega myth I think needs debunking because there's oxidized and not oxidized omega threes, and then there's plant-based omega threes more than one of them, and then there's omega threes, and some of the animals make the same as the plant-based Omega-3. So it's kind of confusing. What are the good omega threes to eat? What are the ones that are actually more dangerous than omega six?

Dr. Cate Shanahan (00:42:37):

We need some Omega-3 in our bodies. We don't need all that much when our bodies are healthy. We need both omega and omega six, I should say. Make that clear. We

Dave Asprey (00:42:50):

Do

Dr. Cate Shanahan (00:42:50):

Indeed, because these are what we call essential fatty acids, and our body uses them for all sorts of things, but when our metabolism is healthy, we really don't need all that much. Historically. Most, we think most people got less than 5% in terms of calories from either omega or omega six, but we don't know very much about that and it doesn't. So that's just a hypothetical. It could be a lot more than that. But here's the thing, and we're talking about something that I want to make an analogy to help clarify this. Okay, so what we're talking about right now in terms of the elongation and that being a problem, we're talking about trimming the sails on a boat. Imagine you have a sailboat and you want to make it go as fast as possible. This is what they do when the America's cut, and they have all these folks that are out there and they're talking about the depth of the hole and exactly what type of ropes do they make the appall ties out of and all these little things.

(00:43:58):

But no one's talking about the fact that, oh gosh, this boat has a gaping two foot hole in the hole and it's taking on water at gallons per second here. That's where we are with vegetable oil because we have to pay attention to the fact that everyone we've been studying is living on more vegetable oil than is healthy, I should say for the past probably 50, 60, 70 years. All of the science that we have, all of these studies that we have where we believe that these elongation ratios are one to 45, maybe it's true, maybe it's not true because we were studying an unhealthy population, or we don't know if we were studying an unhealthy population because medical science never took the time to define what health is and to focus on oxidative stress and how to measure it in the human body and how to identify people who have that healthy metabolism and therefore are able to, they should be the subjects of these basic science studies. So we can't really answer some very important questions because we've not really studied it full stop.

Dave Asprey (00:45:21):

We haven't studied it, but that doesn't stop our dieticians and from making dumb recommendations,

Dr. Cate Shanahan (00:45:26):

Right? They think that they've sled needed, right? The worst thing is to think that you've learned something and then you are closed. Your mind closes once you think that you've learned the answer to a question, what causes heart attacks, cholesterol, what makes cholesterol go up? Saturated fat. Once you think you've learned the answer to that question, your mind is naturally lazy, right? Our brains are really great and amazing, but they're also naturally lazy. They try to save energy. They're like, I answered that question already. I can't go there again. Gosh. And some people just literally shut down

Dave Asprey (00:46:03):

That whole chain of just, oh, our brain saved energy by making a decision and then sticking to it because it was easier than thinking. We do it all the time. It's a feature of our brain to save energy, just like couches look better than gyms. But man, it really does break our science so often.

Dr. Cate Shanahan (00:46:22):

It does. And this gets back to the American Heart Association and their relationship with the vegetable oil industry because not only do they have this intellectual blind side where they can't question something they think they've already learned, they have money on the line now. And there's another thing about the hardest, something about Mark Twain said this, the hardest thing to do is teach a man something that his salary depends on him not knowing.

Dave Asprey (00:46:53):

It does happen, especially in advanced science. If you spent your entire 25 year career on string theory and then some young buck comes along and disproves it, you're going to cancel him. And you're not even going to know why you're canceling him unless you're a highly enlightened theoretical physicist. And there are some of those just go, oh, wow, maybe I was wrong. But man, it takes a hell of a human being to just say, I pursued something for a long time and I put myself worth in it, and maybe I was wrong. Now, if you're a dietician listening to this, put down the McDonald's and go to a meditation class and you too can learn nutrition there. I said it.

Dr. Cate Shanahan (00:47:26):

But I have met people that do that, and I really admire them. And actually, I was just on a podcast with one the other day. His name is Dr. aia, and I call him out in my book for being one of these rare people who is a cardiologist who is making money, lots of money to be made and just profiting off of the illness industry, and especially cardiology, because that's sort of the root of all of this is the wrong explanation for heart disease. And he's taken up the banner of being interested in the truth. And there are people out there. That's the point I'm making. There are doctors, there are dieticians that want to know the truth and they're actually looking for it. But it's just that there's so much noise and so much pressure and so much misinformation coming from the American Heart Association.

(00:48:22):

I keep coming back to them because they are the organization that educates doctors. They do this by, they fund a lot of research. They raise over a billion dollars a year. 200 million comes from industry, from the process, food industry, from pharma, and 800, 800 million comes from people like you and me donating workplace drives. And I want to put an end to that waste of money because it's making, the American Heart Association does one thing really well. They make money for the healthcare industry and the processed food industry by making us sick. And when we are sick, we go after processed foods because we're too tired to learn how to cook.

Dave Asprey (00:49:13):

It's totally true. When you're too tired to cook, you're kind of in trouble.

Dr. Cate Shanahan (00:49:17):

We don't even respect the basic because of the processed food industry, taking over medical education doctors, when we separate people from cholesterol and animal fat, we separate people from their traditions. And this is what I saw in Hawaii where just me saying, fish oil is bad. It's these other things. You can have your liver. They loved the organ meats. They loved bone marrow. They loved using the fatty parts of the animal because that's what people traditionally ate. And once the American Heart Association came along in the fifties and said, no, no, no saturated fat, no cholesterol, they severed our connection to all of these culinary traditions and all of just the joy that families used to have of coming together to celebrate multiple generations of food. And from that, it's not the only thing, but from that, we have the disintegration of the family dinner, and from that, we have the disintegration of the family itself.

Dave Asprey (00:50:25):

I think you're onto something there, and it's one of the reasons I wanted to grow my family's food and live on an island and start a regenerative farm and did all that. And I've had, as long as I was not traveling, I had every dinner with my family, and it was probably thousands and thousands of them. But I

think it does does matter. And there's a lot of people now where you have an hour commute each way, and there's so many activities now, so it doesn't always happen. So I'll just say when it can happen, because it's probably worth doing. And if it's not a perfect meal, who cares? At least you got to have it together.

Dr. Cate Shanahan (00:51:00):

Yes. So nourishing, there's the nourishment of just being with family and having a good time together. And there's a lot of talk now about something called toxic masculinity, and what I'm sure you've probably heard,

Dave Asprey (00:51:17):

Does that come from omega six oils or,

Dr. Cate Shanahan (00:51:22):

I'm going to make the case that it plays a role that these oils have because of the American Heart Association disintegrating the family has led in some ways to toxic masculinity because people who study family structure and just what it takes to be a healthy man in society continuously come back to having a male father figure or a male adult in their lives.

Dave Asprey (00:51:50):

I'm sorry, Kate saying that, doesn't that make you toxic feminine? You can't say that. I mean, I'm feeling triggered right now. Okay. Totally kidding.

Dr. Cate Shanahan (00:52:00):

I'm sorry. Well, maybe it does, maybe it doesn't. I don't know. I don't care. But I believe in it

Dave Asprey (00:52:05):

Acknowledging masculine and feminine exists and that family units who contain those energies are good, and that disrupted lipid metabolism fucks up hormones for men and women and makes it harder for us to interact in a healthy way. That seems like science to me, but maybe I'm toxic. I don't know.

Dr. Cate Shanahan (00:52:23):

I hope we don't get canceled now. No, but seriously, this destruction of people lived to eat, right? We lived back 200 years ago. Everything people did almost was oriented around food, right? The other thing was oriented also was around spirituality and religion, organized religion, a

Dave Asprey (00:52:47):

Little bit of home defense too. So you're like, I'm a hunter. I'm a farmer, or I'm a soldier, or I'm a priest. Those are your professions.

Dr. Cate Shanahan (00:52:55):

Yes. For men, yes. We were raising warriors. And so back in the day, people were so much more real about what a healthy diet is because it mattered so much in so many ways. It was what brought you together, not just your family, but your whole culture. We had celebrations, any excuse to have a celebration, people getting married, people getting circumcised. Maybe that's not the best excuse, but

villages coming together, other things happening, like the seasons, any excuse to get together. People got together around food. It was all around food. And there was so much thought that went into the preparation of the food. That was knowledge. That was knowledge that was built generation after generation, because let's not take away the wisdom that went into this, and just the importance of trusting. Now I'm going to say something that possibly might get me canceled anyway, trusting. What does a healthy human look like? Right? I talked about that in deep nutrition.

Dave Asprey (00:54:04):

I just look at the cover of Sports Illustrated, whatever they tell me, it must be true.

Dr. Cate Shanahan (00:54:09):

Well, your brain knows. Our brains know. It's built into our biology to recognize health because we actually recognize that geometric pattern. I don't know if I ever talked about this with you on my other. No,

Dave Asprey (00:54:24):

But it's real. Talk more about this. I know the pattern. You're going to say it's beautiful. Keep going.

Dr. Cate Shanahan (00:54:28):

Yeah. It's related to the Fibonacci sequence. It's a ratio called Phi, PHI, and it's very important in math and physics and understanding how the universe works, and it's an irrational number that starts with 1.6, one eight and goes on for infinity. And it is the ratio that is so fundamental to growth in all of biology that we see it everywhere and every living thing. We actually see it actually in the structure of galaxies. It's so fundamental to possibly the structure of the universe, but our brains naturally recognize it and identify it as beauty. It's so important that we have a physical, emotional response to seeing beautiful things, whether in a tree, in a flower, in the shape of a galaxy or in a beautiful piece of architecture like the Greeks. Were they based the Parson

Dave Asprey (00:55:31):

Waist to hip ratio? No, that wouldn't be in there would it wouldn't,

Dr. Cate Shanahan (00:55:35):

Absolutely. Was it ratio,

Dave Asprey (00:55:37):

Right? Oh gosh, I'm triggered right now.

Dr. Cate Shanahan (00:55:39):

Oh my gosh, yes.

Dave Asprey (00:55:40):

You're saying some people are more beautiful than others. I just wanted to make sure

Dr. Cate Shanahan (00:55:44):

I'm saying that we cognize. Yes, I'm saying that, and it's not like it shouldn't be controversial because I know

Dave Asprey (00:55:51):

Some people are healthier than others too. It's a fact.

Dr. Cate Shanahan (00:55:54):

People get paid more when they're more beautiful based on their movie stars that are more attractive, make more money, and that is a fact. I don't know how you could argue with that. If you look at Julia Roberts, one of the most beautiful women, most beautiful faces based on this geometric ratio. And so there was a man that I interviewed for my book, deep Nutrition, and his name was Stephan Marwat. He created a geometric pattern based on the Fibonacci ratio sequence and the phi ratio that defines a beautiful human face. And you can overlay this little map over men and women and different races, black, white, Asian, slight variations on the mask, but all of those variations are just tweaks on the number Fi. And in fact, our hand is full of this number fi, and the ratio of this bone to this bone is 1.618, and you do it again and again.

(00:57:21):

And these are all Fibonacci numbers. We have five bones, a Fibonacci number, five bones. These are our metacarpal bones. We have eight tarsal bones in our wrist, and we have two that's a Fibonacci number bones in our forearm. So these are patterns we see over and over again in nature. And it comes from nutrition and the vegetable oils because of oxidative stress, they disrupt the ability of nutrition to manifest in ideal, optimal growth. So that people like me who grew up was my dad was a doctor, so we had margarine, we had my mom cooked with vegetable oil. We avoided butter. Well, I need to wear glasses. I had to have my wisdom teeth removed, my jaw's a little bit narrow. I have all kinds of problems with the geometry of my hips. So I developed hip problems early in life. These are important structural features that keep us healthy, that we lose when we lose good nutrition.

Dave Asprey (00:58:36):

Yeah. The thing about jaw structure, one of the first a hundred interviews was with a guy named Dwight Jennings on the show. This is going back 12 years or something, but I worked with them and maternal intake of nutrients changes jaw structure. So I had to lower my jaw and bring it forward, not through surgery, but just through basically spreading the upper palate. And James Nester and I talked about this. The guy wrote the book on breath, an amazing book, and both of us had to do this to make space in our sinuses and to allow less stress in the jaw. And if our parents had access to good food, we wouldn't have to do all that stuff.

Dr. Cate Shanahan (00:59:12):

Right? Exactly. A generation after generation little mistakes can become bigger mistakes. And so now I think there's a link between this gender confusion that's happening in our society now. I think there's a biological cause too, in addition to some of the social factors and the craziness that's happened since social media and all that kind of stuff. But I do think that it's not a coincidence that after generation, after generation of living on unhealthy diets that have changed our bone structures, that we've lost some of this sexual dimorphism. That is the term that anthropologists mostly use to distinguish male bones, male skeletons from female skeletons. There's real differences that are not really disputed, but we've lost some of this sexual dimorphism, and it's not a crazy thing to say because we're already partly there with this whole discussion around endocrine disrupting chemicals.

Dave Asprey (01:00:24):

Well, testosterone levels are half what they used to be, and we know that excessive inflammation will do that. And for me, that's kind of personal. So I was 26 and I was really not doing well. Chronic fatigue, arthritis, constant sinus infections, all that stuff, toxic mold. I went to the doctor and he called me and said, congratulations, you have lower testosterone than your mom. I was 300 pounds. Or actually at that time I was probably about 2 75. I lost some of it. But when you're low or high testosterone, it changes your view of the world, whether you're a man or a woman. It really does. And just to say that doesn't matter, I don't think is scientifically valid. And the endocrine disrupting things and things like atrazine where I've had some conversations with Bobby Kennedy about that, atrazine appears to be a really potent endocrine disruptor in animals. And so I don't want to eat foods that have high levels of pesticide residues. And it turns out that's seed oils for sure, and a lot of other things. Can I go super nerdy with you? You're one of the few people I think might be able to answer this controversial question.

Dr. Cate Shanahan (01:01:32):

Let's try it.

Dave Asprey (01:01:33):

Well, olive oil, you and I have both put it on the pretty good for you list, but I've found a bunch of studies out there that say that oleic acid, the predominant olive oil fatty acid increases the expression of rate limiting enzymes that break down linoleic acid. And these are called D five D and D 60. And so what that means is if you eat a lot of olive oil, your body is going to further oxidize the omega six oils like linoleic acid. If you eat a moderate or no olive oil diet and olive oil does have benefits, I'm not advocating that. But if you were eat less oleic acid, your body would have more enzymes available to handle the omega sixes you do eat. So that means excessive olive oil probably isn't good, at least if you also eat omega six oils from other sources.

Dr. Cate Shanahan (01:02:31):

Well, so I'm not sure. I'd have to know what exactly that enzyme does. So when we really can't eliminate linoleic acid or these omega sixes when we have them in excess, the only way to get rid of them is either to metabolize them into a longer chain omega or omega six, or to burn them for energy in our mitochondria. So not being familiar with that exact enzyme and what it does, I'd be kind of curious what they're talking about because toxicologists, I've spoken to have said that, yes, these oils, they do build up in our body and behave as toxins because we do not have the ability to eliminate them other than metabolizing them for energy.

Dave Asprey (01:03:14):

They turn linoleic acid into a arachidonic acid.

Dr. Cate Shanahan (01:03:17):

Okay, so those enzymes turn linoleic, so they elongate, right? Yes. Okay. So that's one of the ways that the body's trying to get rid of 'em, I guess.

Dave Asprey (01:03:27):

So if you can't get rid of it, you're going to have more oxidation and more inflammation.

Dr. Cate Shanahan (01:03:32):

Yes. I wouldn't think that that depends very much on our diets. And I say that because the body can turn oleic acid into saturated fatty acids if it wants to, so we can desaturate it. So I don't think we need to worry honestly about that. Nature's not stupid. It doesn't make us have to tabulate all these things and become extraordinary calculating and weighing everything like that and knowing everything about molecules in order to be healthy. Right?

Dave Asprey (01:04:05):

I've gone through periods where I've eaten almost exclusively olive oil, and I've gone through periods where I eat almost exclusively saturated fat from animals and I feel way better on the saturated fat from animals, but I feel best if I do two tablespoons of olive oil, but I don't have excessive amounts of it, and it could have to with membrane fluidity, because if you have hyper fluid membranes from excessive olive oil, that means they're more susceptible to oxidative damage from linoleic acid or other inflammation. So I'm kind of like, how do I build healthy cell membranes? How do I enjoy lots of different foods and how do I not overindex on butter or overindex on olive oil? And I don't know the right answer, but I feel like all one, none or the other is probably not the right answer.

Dr. Cate Shanahan (01:04:51):

We always want to listen to your body, but I would suggest that what you want to pay attention to maybe is also what were you cooking and how were you cooking in the olive oil? Because it does come down to oxidative stress in the end. And so if you were exposing yourselves to more oxidative stress because you were having more slightly easily oxidizable oils and you were reheating your food and exactly you were doing all of that factors in, but you can take your worry engine offline when it comes to, do you need to regulate oleic acid, your oleic acid intake per se, when you cook with oleic acid and it oxidizes, it's not oleic acid anymore. That's what I mean by per se. So you do want to pay attention to your body. If you're doing something with your food that's making you feel bad, then think about how it could be promoting oxidative stress, and that's what dark calories will help you to do.

(01:05:54):

And then go back to dial it down a little bit with the oxidative stress and always the number one thing is get rid of those vegetable oils because they are in a lot of foods that people don't realize. One of the things that I think maybe you say this a lot, but needs to be said during this conversation, if not is it's not just what you cook with at home, right? Everybody's trying to feed you vegetable oils. It is the cheapest oil out there. So all the restaurants are now using them and all the food service industry now uses them. All the workplace cafeterias, they get their stuff shipped in from, they outsource all their sauces and all their marinades and their dips and of course mayonnaise. All of these are just full of vegetable oil. That's how we got to the point where now the average person has something like 30% of their daily calories from these oils. So it's not just a matter of ditching the canola oil bottle next to your stove and using butter or olive oil or one of the, I call 'em the delightful dozen in my book. Instead, it's a matter of really just being on guard out there in the world all the time because truly everyone is trying to shove these things down your gullet.

Dave Asprey (01:07:17):

They are. And I also just would like to warn people, I've seen an explosion of brands that maybe one time we're healthy and then suddenly they use kind of more deceptive things. They just whittle away. So made with olive oil and you turn it over, it's 1% olive oil, 99% canola. There's another brand I've worked with where the label now says butter blend of organic and grassfed butters. And the way I read that is

it's a blend of organic non grassfed butter and grass fed butter. And they don't tell you which one, but if organic is first, that means they cut costs on the organic. And I'm not going to name any particular brand, but you should read your labels. And if it's a butter butter powder sort of thing that you'd put in of beverage or something, it should be a hundred percent grass fed butter. At least that's the way I like to make stuff. But labels can be deceiving, and sometimes the big words on the front are the tiny words on the back.

Dr. Cate Shanahan (01:08:17):

Absolutely. I mean, if you aren't a label reader, you can't know what you're eating, right? And if you don't know what you're eating and eating is the most important thing that determines what your body's built out of and your metabolic health, then you're missing a big opportunity. It's not that hard to turn the bottle around. It is hard to read those teeny tiny ingredients. So some folks over the age of 40, they need to bring a magnifying glass or special glasses to be able to even know what they're buying. But it's definitely worth it. If you can turn that bottle around, then you can turn your metabolism around.

Dave Asprey (01:09:00):

Ooh, that's a great quote. I love it. And it is so possible to do that. Something else that stands out in your work. It is something that doesn't get nearly enough press, and it's, I think in present in three of my books too, it's the idea that there's a difference between hunger and being gly bitchy or hangry or just this craving state. I read a lot about that. My fasting book on fast this way, my second fasting book after the Bulletproof Diet. And what I've found is that I'd never understood what hunger was because I always had a broken energy system. So food was like, if I don't eat soon, someone's going to die and I'm going to have to eat them. You're so hungry and you can't think, and you're just reactive and snappy. So what's the difference in your work between that I'm going to die hunger and I probably should eat in the next day or two, kind of hunger?

Dr. Cate Shanahan (01:10:02):

Yeah. So you're talking about my energy model of insulin resistance and insulin resistance. When we are insulin resistance, we very often have abnormal hunger. I call it pathological hunger. Pathological means related to disease, the disease insulin resistance. So if you get hangry or brain fog or irritable, and there's eight, nine other symptoms that I list as the most common hypoglycemia, blood sugar falling symptoms, that means you probably have insulin resistance. Of course, I have to say there's other things that can cause those symptoms, and headache is one of 'em. Of course, you migraines, you can about the things. So you need to talk with your doctor about what they are.

Dave Asprey (01:10:47):

Why do need to talk? You're just saying that because you're a doctor, you could also just go online, do some research, and find out what it is and change your diet and not spend the money at the doctor's office unless you're really sick.

Dr. Cate Shanahan (01:10:56):

Yes, if you're confident in your research, or you

Dave Asprey (01:10:58):

Could use an AI model that I'll be talking about soon at the Hacking Conference.

Dr. Cate Shanahan (01:11:03):

Oh, that sounds exciting. But yes, we have an epidemic worse than our obesity epidemic. We have an epidemic of insulin resistance. And in chapter three of dark calories, I talk about the research I found that showed that 99% of us in America, more than that actually are already insulin resistant, which is the first step on the metabolic disease progression to type two diabetes. But along the way, insulin resistance also increases your risk. Everything else, it increases your risk of all kinds of inflammatory disorders. Cancer psoriasis increases your risk of, I'm sorry, I threw cancer in there. It's not an inflammatory disorder, but it does increase your risk of cancer. But I meant to say asthma and inflammatory arthritis, inflammatory bowel diseases, you don't

Dave Asprey (01:12:05):

Think of cancer as an inflammatory disorder.

Dr. Cate Shanahan (01:12:07):

Well, I think of it more as not so much being triggered by the inflammatory cascade and all those eicosanoids and stuff.

Dave Asprey (01:12:15):

Yeah, it's not like eicosanoids. It is though from mitochondrial dysfunction, which creates inflammation, but okay, but different pathways. I get it. Why you're thinking that. Okay,

Dr. Cate Shanahan (01:12:24):

It's oxidative stress. Yes, exactly. Yes. Yeah. So the sign though of metabolic damage is those hunger symptoms that what's happening when you have hangry is that your brain is not getting enough sugar and your brain isn't getting enough sugar because all your other cells in your body are gobbling it up abnormally fast because your body fat is reformulated with vegetable oil and it destroys your cells ability to produce energy. So you need sugar, your cells need sugar. They have a physical addiction to sugar, and this is my energy model of insulin resistance that says vegetable oils are the root cause of type two diabetes, not sugar, not carbohydrates. So I throw the whole insulin model of type two diabetes out the window. And I think this is very, very important because it helps people understand that vegetable oils make you crave sugar, but it's not the other way around. Sugar doesn't make you crave vegetable oil, and that's so key to getting your cravings under control and getting your whole life, your dietary life under control.

Dave Asprey (01:13:50):

So eating the omega sixes will make you crave sugar and drinking a coke won't make you crave sugar. That's what you're

Dr. Cate Shanahan (01:13:58):

Saying? Well, it's not the omega sixes. I don't want to focus on the omega sixes because that allows the bad guys. That allows the bad guys to knock down this whole argument, the American Heart Association. So we have to say the hateful eight, you can say the hateful eight

Dave Asprey (01:14:11):

Fair point. So we'll say that the hateful eight oils, that those are going to cause food cravings including sugar cravings. And it's true that if you have just a can of soda, which is not something I recommend, that you'll have far less cravings from that, then you do from eating bad fats. But if you're like most people, your blood sugar will go up, then go down, and when you have really low blood sugar, you'll probably have a hypoglycemia induced craving, which is not the same as a bad, fat, hateful eight induced craving. Those are stronger cravings, right?

Dr. Cate Shanahan (01:14:45):

Well, hypoglycemia actually is hypoglycemia, but so they feel the same. You can't tell the difference, but they're bad in terms of they both drive you back to more sugar and you don't want either one of them right now. Definitely eating sugary foods will put you kind of on a high blood sugar, low blood sugar roller coaster ride. And so I'm definitely not advocating for eating those. I'm just trying to make it clear that one drives you to the other and it's vegetable oils that drive you to sugar, not the other way around.

Dave Asprey (01:15:29):

Gotcha. I like that. A lot of sugar will make you crave vegetable oil. Okay.

(01:15:35):

Something else I like about your work is that most of the longevity doctors I've worked with, and at this point it's hundreds and functional medicine doctors, they look at statin drugs with suspicion. And it's not that they won't ever prescribe them in certain circumstances, but there's a well-known downside. And lately there's this one guy who says he's a longevity doctor, but in his book he says, you can't extend human life. So what you should do is overtrain take statins, get vaccinated, and that the best you can hope to do is to be healthy until you die at the same age you're going to die from before. And I'm like, come on, man. This isn't longevity medicine. This is, I'm a traumatized fat surgeon who's only been in the field for three years kind of thinking, but it hurts my heart to see this kind of message going out there. And your book is so solid about the risks of statins and many of the other cholesterol lowering drugs. So walk me through some of the downsides of statins that maybe we can teach this particular guy about once he learns that we can extend human life.

Dr. Cate Shanahan (01:16:44):

Absolutely. I love this topic because statins are my least favorite drug, and that's saying a lot, a lot of bad drugs out there. So statins are bad because they lower cholesterol. I mean, cholesterol is not the cause of heart disease. Cholesterol is an antioxidant. Cholesterol does not promote oxidative stress. Why do we care? Because oxidative stress is the root cause of all disease. Oxidative stress is what causes the plaque to build up in our arteries. Ultimately, it causes the failure of the lipoprotein, the lip system, and those little lipoproteins full of fat will start to crash and burn on your arteries, or they build inflammatory fat around your arteries. Both of those cause heart attacks. So to say that you need to take a cholesterol pill to lower your risk of heart disease makes no sense. And I know that's what doctors learn, that we are indoctrinated in this whole thing.

(01:17:48):

But that's why I keep calling out the American Heart Association because it all came from the American Heart Association in the first place. The cholesterol theory of heart disease came from Ansel Keys who was the benefactor of 1.75 million of research money from Procter and Gamble who sell vegetable oils at that time. And it wasn't for nothing that he was the benefactor, the American Heart Association could have given that money to somebody else, but he reached up and grabbed it because he knew that he

was against cholesterol and that these oils didn't have cholesterol, and at the very least that they had something going for them in that sense. And so there was this synergy of interest between the oil industry and the N Ansel Keys who was basically running the nutrition flaw at the time of the American Heart Association. And he's the one that came up with this whole idea that cholesterol caused heart disease and he was not a good person, and we shouldn't believe him. And the American Heart Association is not a good organization, and it was their theory. So why are we trusting our health to these bad people who are liars and profit when we are sick just based on that without even going deeper into the science, which I would love to do if you'd like to do that, but why would we trust a bunch of liars?

Dave Asprey (01:19:17):

Maybe because we were so hangry we didn't have energy to think about it. That's the only reason I could think of. And it's funny, the side effects of statins are there. It's not that I wouldn't use them, but the first statin drug was Nystatin, which is commonly used as an antifungal anti-yeast agent. And all of them are potent antifungal drugs. And funny enough, if you have a fungal infection on board, your risk of cancer goes up dramatically. But fungus will also raise cholesterol because it's your body fighting off the toxins from the fungus, which look a lot like cholesterol too. So there's this weird effect where maybe some of the statins are having an anti-inflammatory effect because they're actually having an anti-infective effect, but to be on them for life because one marker is higher than it should be. And to think if I just do that in exercise, I'm going to be healthy until I die at 86. I don't think there's good evidence for that. But if you're a cardiac surgeon or something, it seems like you're just going to be willing to die on that, whatever that pile of rocks or something. I forget the analogy. It's probably a pile of canola oil bottles that you drank. What are some other drugs that lower cholesterol that don't work on extending life or making it healthier?

Dr. Cate Shanahan (01:20:31):

Yeah. Well, the first cholesterol lowering drug ever invented was a drug that blocked the last step of cholesterol formation and it caused cataracts and severe skin diseases. And so it was taken off the market pretty quickly because of that. So the thing about the statins that makes them so successful from a drug marketing standpoint is that they block, unlike this other drug that was the first one that blocked one of the last steps in the formation of cholesterol, statins block a very, very early step. It's a basic building block of not just cholesterol, but things that hold our muscles together, things that make our immune system function. That's how statins suppress our immune system called isoprenoids. And so statins block that and because they block that early metabolic step, people can have one of a million, probably not a million, but one of many, many, many side effects. And so you have so many side effects that from a marketing standpoint, it's great because people will attribute it to just aging or overdoing it or something else, not a single list of clear things that definitely happen from the drug.

Dave Asprey (01:22:10):

Yeah, mitochondrial dysfunctional will manifests throughout your entire body, such a low level thing where, yes, it's tied to Alzheimer's and cancers, but it's also tied to I don't heal as fast, my skin isn't as good and my digestion isn't good. And so it's those things that usually trick doctors because the training is still, well, if there's more than five symptoms, the patient's probably crazy. And so that means anything that's a mitochondrial poison equals a crazy patient, not a broad spectrum foundational assault on biology.

Dr. Cate Shanahan (01:22:48):

That is so true that if people come in with a laundry list of things, it's partly because we are overwhelmed with time. We're supposed to be seeing four patients an hour that gives us seven minutes each. And if they have more than one simple thing, it's like we start to think, oh my God, how am I going to get to all that stack on my inbox that I'm going to get to? But yes, and so I think out of desperation, we kind of justify that like, oh gosh, they really can't be bothered by any one of them. Too bad. But yeah, no, it's really terrible that this lack of a simple root cause philosophy in medicine has made doctors unable to recognize health when it's sitting in front of us. And you mentioned mitochondria. I talk about mitochondrial health because of energy. A healthy person is a person who's full of energy.

(01:23:48):

When you wake up in the morning and you've had a good night's sleep and you have a ton of energy, you feel amazing. Yes. And when you are, metabolism is damaged, you have fewer and fewer of those kinds of days. But because doctors don't learn about how to assess for health and energy and important stuff that people really care about, we instead learn about risk factors like high blood pressure or high blood sugar, and the worst of them all is high cholesterol because high cholesterol is not a risk factor. It's actually, it's an indicator of a nourished body.

Dave Asprey (01:24:28):

Oh my gosh, did you just say that high cholesterol is an indication of a nourished body?

Dr. Cate Shanahan (01:24:33):

Cholesterol is a nutrient, and doctors are so brainwashed about it's being unhealthy for us and it being the root cause, we actually think of it as a toxin. It took me a while to get over that fear of a person's number being high flagged is high. It's red on the lab. It must be true, right? Yeah, it took me a long time to get over that, but cholesterol is a nutrient.

Dave Asprey (01:25:00):

I see it the same way. I mean, if you like having sex hormones which are necessary for life or myelin in the brain, it seems like you kind of need some cholesterol. Whether you eat it or make it doesn't seem to be relevant though, unless maybe you're eating oxidized cholesterol at night. There was a time maybe 10 years ago or so, I was about to call Nina OLS about maybe suing the American Heart Association for some stupid stuff there, like a class action lawsuit kind of thing. Don't worry. A HA, if you're listening, I'm not going to do that. And I gave a talk in Malibu at a very wealthy person's home, and some of the Hollywood elite were in the room. This one lady's a cardiothoracic surgeon. I had her name still. And I said, well, I dunno if you like what I have to say here, but I walked through some of the stuff we're talking about here and the effect of high carbohydrates and omega sixes and how cholesterol wasn't a problem to eat.

(01:25:56):

And one of the major producers in Hollywood was like, well, I have an egg white omelet every morning. I'm like, give me the yolks and we can hang out. So she stands up and goes, I'm a former president of a chapter of the American Heart Association, and I'm like, man, this is going to be fun. I know my science, but it says a lot of credibility. And she stands up, she looks around and everyone, she goes, what you just said is right. She said, two years ago we announced that cholesterol is a nutrient of non-con concern, but no one will listen to us. They're still stuck on this idea that eating cholesterol is bad for them, but we don't even think that's true anymore. It was almost like, I honestly almost teared up because like, man, I thought I was going to have to take these guys down, and that's a lot of work. And so at least they cleared that up. They still think saturated fat's bad for you. That's a different thing. But the whole

cholesterol thing is such nonsense. You can eat it or not eat it, but it does seem that eating oxidized cholesterol, like powdered egg whites probably isn't good for you. Talk to me, oxidized versus non oxidized cholesterol.

Dr. Cate Shanahan (01:26:56):

Yeah. Oxidized just means that your body can't use it. And so instead of being able to put it into lipoproteins and circulate it around in a healthy way, your body needs to eliminate it into the bile. So that is one of the reasons why we don't really have to worry about eating too much cholesterol. If our body senses that we have too much of a thing, we can simply not have it in our body and our liver will eliminate it. Right? Also, our bodies are smart. If we already have enough cholesterol, we won't make anymore. We'll stop making it. But we need a lot. We need 2000 milligrams a day, and a tablespoon of butter has something less than a hundred milligrams, so we'd have to have 20 tablespoons of butter. It'd be hard to eat too much cholesterol.

Dave Asprey (01:27:50):

Yeah, it'd be very hard.

Dr. Cate Shanahan (01:27:52):

It'd be hard. But oxidized anything is not good. Oxidation destroys nutrients and very often turns it into toxins. And you know that some of the earliest experiments linking cholesterol to heart disease were done in rabbits who this is a hundred years ago, a guy named OW injected rabbits with cholesterol.

Dave Asprey (01:28:19):

That rabbit study

Dr. Cate Shanahan (01:28:20):

The rabbits developed atherosclerotic lesions. They didn't have heart attacks, but they at least developed atherosclerotic lesions, which was bad. But it turns out that he was using oxidized cholesterol because this was back in the day, they did not have very good ability to purify cholesterol and it was oxidized. So when you use regular cholesterol and you don't inject it, but you eat it, it's very difficult to give experimental animals atherosclerosis and nearly impossible to give them heart attacks. Most of these studies in animals that talk about causing heart disease don't give them heart attacks, it just gives them fatty streaks or something like that, which is very, very early stage of the damage. The body is smart, it can clean up these fatty streaks if you're healthy. But so oxidized cholesterol was the reason that cholesterol was even on the list of possible things that could cause heart disease because of oxidation.

(01:29:27):

And this just gets back to the importance of understanding oxidation a little bit. If you want to be healthy as a consumer because doctors don't learn about it, and if you want to be one of those doctors that actually does have the ability to help your patients and give me a lot more reward in my career, then you have to understand oxidation. It's crucial because oxidation is what makes us sick and kills us. And if we're recommending a diet that promotes oxidation in ourselves, we're going to be making our patients worse. And we are basically becoming agents of disease if we're recommending vegetable oils to our patients.

Dave Asprey (01:30:10):

There you go. You've been so consistent in your message now for more than 10 years. You've helped a lot of people understand this. You have the great medical credentials and you're willing, just say the hard things. It's not a popular opinion still for a lot of the world that your cholesterol drugs are probably just malnourishing you and making your mitochondria not work as well. Cholesterol be damned, right. What about A POB? There's a lot of conversation about that. Would you look at drugs to lower that?

Dr. Cate Shanahan (01:30:42):

No. So A LB is an AP lipoprotein, and it's an apolipoprotein that the body makes to help distribute cholesterol, fat, fat-soluble vitamins and other nutrients throughout the body. It's part of the lipoprotein delivery system for fats circulates throughout our bloodstream. It's not a bad guy and it's associated with LDL, right? So that is how it's gotten called out as a problem, but it literally is not a problem. Having high LDL is not a problem. There is no such thing as bad cholesterol in a healthy oxidative stress under control body. And of course, it's not just a POB that can play a role in heart disease. When your diet is unhealthy and your lipoproteins are oxidized, it's also all the other ones. You can oxidize a OA, you can oxidize a OE, and that is all bad. And

Dave Asprey (01:31:55):

We don't even measure oxidized A POA or B. So let me read you a direct quote from when Peter Atia was on my show back before he had a podcast and decided to charge a quarter million dollars to tell people they can't live longer, he says, and so I know, unfortunately it's really popular in the blogosphere to talk about how heart disease has nothing to do with LDL and has nothing to do with cholesterol and all these things, but the reality of it is that's just patently false. This is clearly a disease that is driven by lipoproteins inflammation and endothelial dysfunction. So he says it's patently false, everything you just said. Now, granted, he only has a couple years in the longevity field. He's a fat surgeon with trauma. We have to account for that. He just got sick, decided to get well and decided to do it by exercise, exercise, exercise and statins and vaccines and wrote a book about it. But how do you account for medical doctors with lots of books saying that it's patently false, that cholesterol causes heart disease. One of you guys has to be right. I think I know who's right. It's pretty obvious. But how do you respond to people who just say it's false?

Dr. Cate Shanahan (01:33:08):

Well, I'm just saying they don't understand oxidative stress. I mean, that's the simplest way to put it. It's oxidative stress is what sickens and kills us, and it's not cholesterol. Cholesterol is a molecule that has been with life on earth for a couple billion years, and it's been in our bodies ever since we've been humans, and it's been at pretty high levels. There's so many studies that show that high levels of cholesterol correlate with better longevity, less dementia, less cancer, and on and on it goes. It's selective thinking. I would say that people, they have to have something I guess that they say is controversial. I don't know why saying that, but it's not based on a knowledge or understanding of how the body works and what makes us sick. I can tell you that. And also there are doctors, so that's the mechanistic argument he has.

(01:34:04):

There is none. There is no mechanistic argument that by which cholesterol can cause oxidative stress and therefore cause atherosclerosis and therefore cause heart attacks. We have to go step by step here. We can't just say cholesterol bad. We have to understand every step in the process when we're talking about a disease mechanism. But there are, aside from the lack of mechanistic evidence against

cholesterol, there's so many doctors who are practicing with living patients and have thousands of living patients of worth of experience that without really thinking about any of the mechanisms, they came to the conclusion themselves that people were looking better and feeling better and not dropping dead of heart disease when their cholesterol was high. Also, some of these doctors are of a certain age, like myself, and when we first graduated, when I was first in training in medical school, a high cholesterol was 300, total cholesterol, it's 300 and they've had to lower this time and time again. And now we're talking about not just total cholesterol anymore, we're focused on LDL. Well, when I first graduated, that number was one 90 and now it's down getting down below 70, and they're talking about maybe lowering it to 20 because they don't think that would kill people. So that too, having that extra perspective of why do they keep moving those goalposts?

(01:35:39):

Why are they changing the rules of the game? Why do they have to do that? Well,

Dave Asprey (01:35:42):

They have to do it because they have to be right? Because it's too much work to rethink some basic beliefs there. Yeah, I've gone through the, oh my gosh, my cholesterol is high. And right now it varies. It's usually around two 20. Cholesterol tests change based on what you ate. You can lower your cholesterol by 50 points in three days if you want to get life insurance or something. We know how to do that. Activated charcoal helps. There's just lots of ways to just tweak cholesterol. So it's just a nutrient that flows around in your blood.

Dr. Cate Shanahan (01:36:11):

It's hard sometimes to raise it.

Dave Asprey (01:36:13):

Oh, it's quite hard to raise it. What I see from millions of people who've gone on the bulletproof diet over the years is almost universally HDL goes up, triglycerides go through the floor. Those are both good things. LDLI couldn't tell you. Some people it goes up, some people it goes down, and for more than half of people, it'll go up for two years and then go down. And during that time, they resolve fatty liver, and that's why their cholesterol is high, is they're transporting all the crap oils out of their fat. And I'm sitting here, I just had a liver scan. We're doing a bunch of those of the biohacking conference with one of the vendors there, and they said, oh, wow, you have exceptionally low stiffening of the liver for someone your age, top 1% of that and exceptionally low, almost unheard of fat in the liver and my F MRIs, and it's like less than 0.8% liver fat.

(01:37:08):

Last time I had it quantified, which is low for an 18-year-old. So apparently eating all this fat lowers liver fat. And during the process of lowering liver fat, which is high, if you have diabetes or prediabetes, you might have more triglycerides or you might have more cholesterol. So it's a multi-year problem. But this isn't something that you're going to hear when somebody says, take some drugs to reduce cholesterol. They didn't talk about homocysteine, they didn't talk about C-reactive protein. They didn't talk about all the other markers of inflammation that are clearly more correlated with heart attacks. So it's frustrating when you hear people taking steps that reduce their energy, which is what Satans can do for a lot of people out of a false fear or just from getting bad advice from popular books.

Dr. Cate Shanahan (01:37:53):

It's tragic really, because I've seen this happen so many times that people feel going back in people's histories. They were basically okay, but they went to their doctor for a physical and they had the high cholesterol war put on a statin, then they start feeling depressed because your brain needs cholesterol possibly partly because of that. But no, they blame it on, well, I'm going through a divorce, right? Maybe you're going through a divorce because low cholesterol also makes people irritable. This was something that Dr. Beatrice Golem discovered many, many years ago, makes lowering cholesterol can make some people irritable. So it can change your personality, but I would see these people that as going back in their history, more problems accumulated and more drugs. I call it the statin slippery slope. You start out healthy, you go in for a physical, your cholesterol's up, you get on a statin, your health goes downhill from there. Then the next drug might be you're depressed and you're going through a divorce. Now you're divorced. Now you want to go date, but oh gosh, now you have a low testosterone and erectile dysfunction, so you get on a drug for that. Those are pretty safe.

Dave Asprey (01:39:10):

I'm glad you said that. I would just, one of my longevity drugs is low dose or microdose Cialis because enormous studies about blood flow in the brain,

Dr. Cate Shanahan (01:39:20):

Right? But then another, I've seen this pattern. So people get, and then they get another problem, say maybe it's heartburn, right? Because your cholesterol, if you're low in cholesterol, then rapidly dividing, cells can't divide so rapidly and your gastrointestinal system is full of the most rapidly dividing cells in the body. So statins cause lots of intestinal distress. And then you get on another drug like omeprazole or a proton pump inhibitor that lowers your acid, your stomach acid,

Dave Asprey (01:39:55):

And you can't absorb minerals at that point, and then you're screwed,

Dr. Cate Shanahan (01:39:58):

Right? Throws off your whole gut flora. It is associated with a higher rate of osteoporosis and bone fractures and on and on it goes. That is the statin slippery slope. And so one of the other reasons I wanted to write this book was to help people gain the confidence that they don't need that statin, that high cholesterol is never been the problem that hurt anyone, and it will never hurt you. It's actually a good thing to have. And especially if your HDL is high and your triglycerides are low, you can go ahead and celebrate that high total cholesterol and that high LDL because it means your body is replete with this very important nutrient.

Dave Asprey (01:40:41):

I like that perspective. I'll say it's a nuanced argument. And when someone tells you straight up looks at you, you have high cholesterol, you're going to die. It's the same thing as saying if you don't smoke, like the way your doctor says you're going to die, or if you don't buy a new pickup truck, no one will love you and then you'll die. Or if you don't buy my makeup, you won't look pretty and then you'll die. It's not reality. It's marketing and it's very dark marketing that's expertly designed and it's delivered by doctors who are not even aware they're doing it because it's really good marketing. You can't spot good marketing when it's done right. It just looks like it's obvious. So I feel like we're experiencing that with seed oils. I feel like we're experiencing that with statin drugs. It's sad to see that some people get cied at and then expand the thing and probably are suppressing their own testosterone and suppressing their

own cholesterol to the detriment of their cognitive function. So I don't like seeing this happen in our society, especially to our elders. When you're in your sixties, seventies, eighties, you've probably made enough mistakes to really learn some good stuff, and that's when you're supposed to be giving back and teaching people. But not if your brain's too tired because you're on blood pressure lowering medications. So your brain has no blood and you're on anti-cholesterol medications, your testosterone's in the tank. It's no wonder you just want to watch Jeopardy all day. I would want to watch Jeopardy all day under those circumstances.

Dr. Cate Shanahan (01:42:20):

One of the worst things I hear from that makes me the most upset is when someone has read my books, but their spouse hasn't, and they're on a cholesterol medication, and then they tell me that they notice that their memory is slipping, and also they're not avoiding the seed oils. So there's so many things that assault our brain. There is cigarette smoking is an assault on the brain. Oxidative stress, alcohol is an assault on the brain. It's a solvent. It also damages mitochondria and the vegetable oils and the statins and those combine, and they create so much suffering in the form of cognitive decline, mood disorders, serious mental health problems. I truly believe that most mental health disorders are metabolic disorders and that they can be reversed entirely, or at least a whole bunch with improved diet, starting with getting off the vegetables. I know a lot of folks are using the keto diet now for a lot of these amazing health turnarounds in mental health.

(01:43:36):

And also the keto diet is giving, taking diabetics off of drugs. But if you do a keto diet and don't cut out the seed oils, you don't get the, and so this is another thing that takes us back to cholesterol in the American Heart Association because there are a number of studies on the keto diet for diabetes that were designed not by, that were designed by dieticians who are concerned about cholesterol that essentially kept people on a lot of vegetable oil. And those show that the keto diet fails to be any better than the standard of care for diabetes, which is a high carb diet. So the keto diet only works for anything if you're also, if you're not, I'm sorry, the keto diet only works when you cut out the seed oils.

Dave Asprey (01:44:35):

Thank you for saying that. I did the keto diet called the Atkins Diet way back in 1990 when I was trying to lose weight at the end of high school. I was getting fat, but the original Atkins diet was like, if it's not a carb, you can eat it. And so it was full of bad oils, and I saw so many people including me, I could lose 50 of my a hundred pounds to lose on that kind of diet. And then you plateau and then you start telling yourself, I'm just not keto enough. If only I could do nine grams of carbs instead of 12. And even speaking at some of the early low carb conferences about that, the Bulletproof diet was like, Hey, ketosis with the right fats works, ketosis with the wrong fats doesn't work. And it's true also of proteins, soy protein for ketosis is pretty shitty.

(01:45:23):

So once you teach people that and that they don't have to be in ketosis all the time, just some of the time, suddenly a lot of stuff opens up for them and there will be shifts as their metabolism improves. But I do have one more question about cholesterol here. I see people talking about LP little A, they're talking about A POA and BLDL particle numbers and LDL lp. How important is this? It feels like we're just saying, well, it must be cholesterol, therefore we're just going to look so far inside cholesterol until we're seeing mandalas or something. But is there any validity to this or is this just worried to doctors trying to stick to the cholesterol hypothesis?

Dr. Cate Shanahan (01:46:12):

Well, it's making a very simple thing so much more complicated than it needs to be. It does come down to oxidation. Now, one of those markers, I think is a reflection of oxidative stress. And that's LP little a. Yes. And I say that because I have seen that improve strangely enough when people get off protein powders, because like you mentioned, protein powders are not the natural form. Power body is protein, but they can promote glycation, and that's a form of a chemical reaction that is related to ative stress. But I've seen people with high lp, little A who have a lot of protein powder in their diet. I've told them to swap that out for real food-based protein and their LP little A has improved. I've seen that time And again,

Dave Asprey (01:47:04):

Is that because of the amino acids, like leucine can raise LP little A?

Dr. Cate Shanahan (01:47:09):

I think it's because, yes, the amino acids are sticky, and something about that LP little a molecule attracts certain amino acids to it. We don't really know what, we don't really know all the ins and outs of this particular lipoprotein that we're calling LP little A. We don't know what the function is of it when it's not in its amino acid adduct form, this abnormal form that we identify. So we just don't know. But I do know that I have seen that reverse

Dave Asprey (01:47:44):

Steak, not collagen powder.

Dr. Cate Shanahan (01:47:46):

Yeah, exactly right. Real protein, real food protein.

Dave Asprey (01:47:49):

Got it. I'm not opposed to doing both till I think there's some pretty good evidence for collagen, but I wouldn't live on it. I would max it out at 20 grams a day.

Dr. Cate Shanahan (01:47:56):

I'm glad you brought up collagen powder. Collagen is a little bit different than say, hydrolyzed beef protein or hydrolyzed soy protein or the hydrolyzed proteins, because collagen is actually made up of a different group of amino acids. And it's not fully hydrolyzed either. It's partly hydrolyzed, and there's peptides in there that have positive effects in our bodies.

Dave Asprey (01:48:17):

Exactly.

Dr. Cate Shanahan (01:48:17):

So I don't put that in the same category as the muscle building kinds of protein powders.

Dave Asprey (01:48:23):

Yeah, I do. I made collagen a billion dollar industry category when I was at Bulletproof. And by the way, guess you haven't heard it. They let me go years ago and I don't have anything to do. It's been bought by an investment bank. So I've gone over there is not something I have any visibility into or control over. But collagen, when you take it in very high doses, it actually metabolizes in a meaningful way to oxalate. So if you're avoiding kale and spinach and you're doing a hundred grams of collagen a day, you're probably overdoing it. And 20 grams a day is not going to turn into a meaningful amount and it'll provide the signal to your body via peptides to trigger healing of your joints. You're scanning your tendons. I wrote about that in my last book. And collagen, when you take it alongside animal proteins, changes the ratio of amino acids.

(01:49:12):

And I would guess without any studies on this, that changing the ratio of leucine to glycine, which is high in collagen would probably affect LP the light. But again, that's just a guess based on how things seem to work. But we also know matching methionine and leucine to glycine has other benefits. This is kind of nerdy deep protein stuff. If you're sitting here going, well, I'm not supposed to use protein powders. What do I do? I can't get enough protein. And if you're on OZEMPIC or something, use the protein powder and don't worry about LP little A. It's more important you get the protein than not the protein. But if you can eat meat instead of powdered meat or dairy, that's probably a good idea. So I'm with you there.

Dr. Cate Shanahan (01:49:56):

Yeah, it makes a world of difference to do what our bodies are expecting for so many different reasons. I remember in the seventies living through the sort of the better living through chemistry era and the astronaut promoting Tang dehydrated food.

Dave Asprey (01:50:13):

Oh my gosh, I remember that.

Dr. Cate Shanahan (01:50:16):

But the more that processed and the more that it's, the more something is processed, the more it oxidizes and that makes it less nutritious. So really the key is just finding real foods that you can make as quickly and conveniently as something like a protein powder. And I have quite a few recommendations in the back of my book, dark Calories to help you actually get real healthy Whole Foods to be about as convenient as these instant processed foods that everybody's trying to feed us.

Dave Asprey (01:51:01):

I like it. We're going to make it so people only want to buy good food. And when they see these seed oils, the Hateful eight in the label, you just don't buy it. And then that immediately causes seizures in the board members of processed food companies. And after two quarters of that, they change their formulation. Campbell Soup a few years ago had a 20% drop in sales, and they reformulated, I have less chemicals. Who would've thought? So thank you food babe, for continuing that fight when it needs to happen. Great. So Kate, I absolutely appreciate your work. You've been consistently right with probably with a couple little things that aren't right just like me, but you're directionally so far ahead of the curve that it's always a pleasure to talk with you and hear what you're up to. And I love the way you package things to make it really easy to understand the hateful aid and delightful dozen and just ways to think about it so it doesn't have to be that difficult. So I appreciate your work and I'm looking forward to talking with you again in a while.

Dr. Cate Shanahan (01:52:01):

Yes. And maybe I'll have another book by then. Who knows?

Dave Asprey (01:52:04):

The book that we're talking about now, when did it come out? Or when does it come out?

Dr. Cate Shanahan (01:52:08):

June 11th.

Dave Asprey (01:52:08):

June 11th. Alright, so I think we're going to drop the show for the week, the first week, so that you hit that PR window. Of course.

Dr. Cate Shanahan (01:52:17):

Thank you.

Dave Asprey (01:52:17):

It's right after the conference about a week after, so it's good timing. I'll do my best to support it.

Dr. Cate Shanahan (01:52:24):

Well, thank you so much, Dave. I really appreciate these conversations. You always make my little bit of smoke come out of my ears with all your deep thoughts and deep knowledge.

Dave Asprey (01:52:34):

Well, thanks. And I only trolled Peter Ratti a little bit, but that's, he's been on a biohacking hateful rant lately, so I just like to poke him. It's funny. And so thank you for the calm and rational discussion about statin drugs.

Dr. Cate Shanahan (01:52:49):

My pleasure.