



Transcript of “Mark Hyman on the Dangers of Fructose”

Bulletproof Radio podcast #144



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Dave: Today's cool fact of the day is that scientists didn't discover the presence of blood sugar was a normal physiological phenomenon until 1848, before that they thought that any blood sugar was a sign you were sick and that diabetes was a nervous affliction of the lungs. You look at how far medicine has come ever since then.

You're listening to Bulletproof radio and today's guest is none other than Mark Hyman. Mark is a very well known guy who's become a friend of mine. I had several opportunities to spend some time with him, just an amazing gem of a human being as well as a physician who really looks at chronic illness and root causes and is one of the leaders in the field of functional medicine. He's also a family physician and he's only written 8 New York Times Best Selling books about health and wellness. He runs the Ultra Wellness Center. He's a columnist for Huffington Post. He's a regular on the Katie Couric show. He's on the medical advisory board for Dr. Oz and about 50 other things that are just incredibly impressive. If you wanted to just have an example of someone who's carrying the flag for modern functional medicine, Mark is the guy. Mark, welcome to the show.

Mark: Thanks for having me, Dave.

Dave: Let's talk about functional medicine and why people who maybe aren't even sick might care about functional medicine. What is it and what does it mean to you?

Mark: Well functional medicine is something that most people probably have never heard of but is something that everybody will get eventually. In the past we used to call cars, horseless carriages. Today we call medicine, functional medicine is the right medicine, it will be called just medicine because it's really understanding the root causes of disease. Right now we practice medicine by symptom. If you have a symptom then we make a diagnosis. What functional medicine does, it says wait a minute, we're not a bunch of collection of different organs; we're an

organism. We're a system. We're an integrated system and we have to understand what the roots of disease are, not just the branches and the leaves. We want to get to the roots. Functional medicine is a methodology of thinking about how to get to the root causes of illness.

I would say for example if you have hopelessness and sadness and you don't have much interest in food and you're not interested in sex, the doctor would say, "Oh I know what's wrong with you, you have depression." Right? But that's just the name of your disease; it's not the cause of the disease. Functional medicine teaches about the cause and when we get to the cause we can say well maybe it's because you're eating gluten and that's causing an autoimmune thyroid problem or maybe because you've been taking an acid locking drug for reflux that's causing a B12 deficiency or maybe you live in Northern British Columbia and have Vitamin D deficiency or maybe it's because you have taken antibiotics at all through your gut floor to change your brain chemistry or maybe it's because you eat sushi all the time and tuna and have mercury poisoning or maybe it's because you hate fish and have Omega 3 deficiency or you too much sugar and have prediabetes. All of those will call cause the same symptoms, but with functional medicine we can actually figure out which of those problems are causing your particular set of symptoms that are called depression but it's really a different a framework for disease.

Dave: That was the coolest run on sentence I've ever heard. It's so accurate because every one of those really can cause this problem. When we look at biohacking, this art of changing the environment around you, you're one of the physicians who's really looking at, okay what are the environmental inputs rather than looking at it as just one part of the body or even just the body because most of what you described wasn't even in the person.

Mark: Right. It's about how's the environment and your lifestyle affect your genes and your biology to create the you of who you are in this moment, that's what functional medicine is. It's understanding the dynamic of all those factors that are lifestyle and environmental that are driving. We were talking about mold before, heavy metals or environmental toxins; all of those things influence our health and also our constitution. Our

resilience, our biological resilience affects our health. Functional medicine is the science of creating health and creating more biological resilience so you actually can be more able to tolerate a wide range of different stresses, that's what resilience is.

Dave: It's amazing that you mention resilience. The last few podcasts I've recorded it's just come up naturally because the end result is not that everyone necessarily wants more energy, but they want more resilience because resilience is more important than just having more energy. If you're a little tired but you can take what's coming to you it automatically means you have the energy, but when a little thing just knocks you over and you don't recover well, that's when you know that maybe you're not sick, but you're not well either. My experience is that most people spend most of their lives not being well because they've never felt what it's like to be well.

Mark: That's right.

Dave: If your bar is here, like okay I'm feeling good, they don't know they could be all the way up here.

Mark: That's right. Most of my patients say, "Dr. Hyman I didn't know I was feeling so bad until I started feeling so good. I thought this was what I was supposed to feel like." Right? A little achy, a little tired, a little runny nose, a little congestion, a little digestive issues, a little muscle pain, a little headache. People tolerate so much that they don't have to and that they're really only a few days away from health and happiness. It's amazing how quickly people can shift.

Dave: People can shift so quickly and they become aware or they become unaware of these things because they sneak up. You get these little tiny drips and all of a sudden you've been eroded, because I run an anti-aging education group that's been around for 20 years, it's so much work to take someone who's broken and fix them compared to just doing the basic things that stop erosion in the first place, preventative maintenance. Not many doctors talk preventative maintenance, but I know you focus a lot on that. What are some examples of the types of preventative maintenance that you'd recommend for someone who's

under 30 and in reasonable good but not tip top condition who would come in?

Mark: Well you know Dave; it's amazing you talk about this because the thing that causes you to prevent disease are the same things we use to treat disease. It's actually the same stuff. I can take someone who's very very sick and use intensive lifestyle therapy to fix them, let's say diabetic; or I can take someone who's well and keep them well using the same strategies. The things that I do for myself to keep myself healthy are the same things I use to treat my chronically ill patients; they've just never done them before. When you actually put in the right things and take out the bad things your body works. It's obviously not rocket science.

I get sort of embarrassed that I get paid for telling people to eat real food, to move their bodies, to learn how to reset and restore and relax and how to connect and love other people. It's sort of silly, right? Most people don't have the simple tools of how to care and feed for their human body. We don't learn that in school, we don't know how to do it. We don't have the right information and so we don't do it and so our bodies break down and we get sick. That's really why I love functional medicine, because it's really the science of creating health.

What do we do? We take out the bad stuff and we put in the good stuff. What do we take out? Well it depends on the person, right? We take out the crappy diet, we call that the SAD diet, the standard American diet. You want to eat real food, but get rid of all the processed foods and junk and those things erode your health over time.

The second is chronic stresses of any kind. Any unremitting stress, physical or physiological will break down your body so you have to learn how to manage your response to life, because stress is not necessarily an external thing, it's your response to that thing. Woody Allen has a gun to his head, he freaks out. James Bond he has a gun to his head, doesn't bother him, right, same external event, different response.

Then there's other factors that some people have to get rid of like allergens or toxins or microbes and the way that we do that is allergens, you know, if you have any kind of health issue doing an elimination diet

or a detox works really well. I just wrote a book called the Ten Day Detox Diet which is really a reset and sometimes you don't know if you're reacting to something until you get rid of it like dairy or [inaudible 00:08:20].

The second is microbes. Keeping your gut floor healthy is really really critical and those are the most important microbes you're dealing with. Doing things like eating fermented foods, taking [carbionics 00:08:32], eating lots of plant foods, keeping your gut floor healthy is really important.

The third thing is reduce your toxic load. You shouldn't be eating high mercury fish like tuna and swordfish. You should be avoiding toxins in your environment if you can. I'm on the board of the Environmental Working Group and at ewg.org they have all sorts of wonderful guides like how to have safe things that you put on your skin called Skin Deep, whether your cosmetics have toxins in them or your household cleaner or your food. How to eat food that has less pesticides. There's some strategies to doing that that are easily available at ewg.org.

Dave: By the way, just a quick shout out for EWG, this is one of those websites if you haven't come across this before, I'm a giant supporter. I made a donation, maybe not that giant but giant by my standards anyway, this year because it's one of those organizations that has just beautiful information that's accessible about the stuff that's making you weak that you don't even know about.

Mark: Yeah and it's personal, right? Most of us think environmental toxins, it's vague, it's abstract. They make it personal. They make it accessible. They make you able to be do something about it, that's why I joined the board because I believe in what they're doing. You get rid of the bad stuff, toxins, allergens, microbes, stress, poor diet and then you put in the good stuff. This is true for any condition or any disease or any prevention strategy and the good stuff is obvious. It's real food. There's debates whether you should be Paleo or Vegan. I call myself a Pegan, a Paleo-Vegan. Meat should be a condiment and we should be eating mostly vegetables.

- Dave: Sorry to interrupt. The other equivalent of Pegan is lactoovobeeoforkovegetarians.
- Mark: I like that. That's good. I'm going to call myself a Pegan. I think we have to move towards eating less animal products but they can be part of a healthy diet. It's very low glycemic, which means it shouldn't raise your blood sugar and I've written a lot about that and that's probably the most important quality of the diet, whether it's vegetarian, or whether it's not. It should be a very low glycemic diet. If you're eating chips and soda, that's a vegetarian diet. That's not what you want to be eating or eating a ton of rice, that's a vegetarian diet but it may not be healthy.
- Dave: Let's talk about fructose because fructose is low on the glycemic index. Fructose is what you find in fruits or in high fructose corn syrup. Given what fructose does to diabetes and all, how does that fit into your perspective on sugars and glycemic index?
- Mark: Great question. People just need a little bit of a lesson on sugar. I've written a lot about sugar, *The Blood Sugar Solution*, *The Ten Day Detox Diet* and you can learn more about the science of it in those books, but the idea here is that sugar is comprised of two molecules, glucose and fructose. Table sugar is glucose and fructose. When you have fruit you're getting a little bit of both. There's more fructose in it, but it's combined with lots of fiber and it's more slowly absorbed. It has also lots of vitamins and minerals along with it in phytonutrients. It's different than for example, having high fructose corn syrup. When you have glucose, your blood glucose will go up. When you have fructose, your blood glucose won't go up, so it says it has a low glycemic index and you think that's okay, but actually here's what really happens. Fructose goes right to your liver, like main lines to your liver and it turns on a switch in your liver called lipogenesis, which means it actually turns on a fat production factory so you make triglycerides. You become insulin resistant or prediabetic. You become inflamed. It turns on fat storage in the belly and when that happens you increase insulin which sucks the available fuels out of your blood so ketones, glucose and free fatty acids and they go into your cells and the fat cells around your belly fat and your body thinks wait a minute, there's nothing here so I better slow my

metabolism. I better eat more and I better store fat, which is the opposite of what you want to do and then it causes fatty liver.

We see 5 year olds with fatty liver; we call it non-alcoholic fatty liver. Fatty liver used to be only in alcoholics, now we see it in little kids because they're drinking soda because the high fructose in the sodas and something that's up to 75% fructose and it's free fructose causes this huge reaction and causes fat production in the liver, it's like foie gras. These kids are now 12 years old and needing liver transplants. Fructose is not bad in of itself if you're eating it in fruit, but if you're having high fructose corn syrup, it's a bad news game because when you see anything with high fructose corn syrup it's not really that much worse for you than regular sugar but it's a sign that it's a poor quality food, that it's a hyper processed food, that it's probably got tons of other bad ingredients in it and you should stay away. Also in the manufacturing process they use chloralkali, which puts mercury in the high fructose corn syrup, so you're getting a little mercury sometimes with your high fructose corn syrup.

Dave: There's no extra charge though, it's okay.

Mark: No extra charge. There's another thing that happens and this is from Dr. Bruce Ames in Oakland. He's one of the most revered and respected scientists, Bruce Ames. He actually is studying the effect of high fructose corn syrup on the gut. What he found is that when there is a lot of fructose in the diet in the form of high fructose corn syrup, it requires a lot of energy to be absorbed. In order to absorb fructose across the intestinal lining, it uses 2 molecule of ATP. It actually sucks the energy out of the gut. What happens is the gut has these little cells that are stuck together like Legos like this like tight junctions and requires energy, but when you eat too much fructose, these Legos come apart and you get leaky gut and that means food particles and bacteria and other toxins leak in to your bloodstream. By the way 60% of your immune system is right below your intestinal lining. Your essentially one cell away from a sewer and you eat fructose, high fructose corn syrup containing foods, you're getting a leaky gut that's leading to more inflammation and more disease. It's not a good idea.

- Dave: Is there a maximum amount of fructose that you think is safe per day for the average person to have?
- Mark: I think if fructose is contained in natural foods I wouldn't even worry about it.
- Dave: Wow, so 100 grams from bananas or peaches, no problem?
- Mark: I mean who's going to eat 20 bananas? Self regulate, right? How many bananas can you eat? How many peaches can you eat?
- Dave: When I was a raw vegan, I was pretty heavy duty on the fruit partly because I was starving all the time so I was just eating everything like that but ...
- Mark: Be careful with fruit, I mean you can overdo it on the fruit.
- Dave: I gain weight from fruit so I tend to eat 1 to 2 pieces in the evening only if I'm going to do it.
- Mark: I agree. If you are prediabetic or insulin resistant or any medic predispositions, you are going to respond much differently the same amount of sugar. For example, if I eat something with sugar or fructose, my insulin might go up like this, yours might go up like this and over time even though it's the same exact food, my body responds differently than yours, you will then start putting on belly fat and store fat. I think yes, you have to worry about the glycemic load and if all you're eating is fruit, that's a bad idea.
- Dave: Absolutely. What about the connection between fructose and gout? People always think of meat causing gout.
- Mark: Yeah well it's not actually meat that causes gout. It's actually insulin resistance or prediabetes, which causes increases in uric acid. We see this all the time and in fact it's the sugar that causes gout, not the meat.
- Dave: Well said, thank you. If you're listening to this and you haven't heard that and someone's telling you, oh eat less meat, which means eat more sugar usually because you have gout and I say this because a lot of my

friends in the 30 to 40 age range in Silicon Valley, entrepreneur types, they're getting gout. They call me up and like number one drop the beer, number two eat less sugar and maybe less grain, heaven forbid.

Mark: Yeah. The alcohol is sugar, so people get it from alcohol too.

Dave: You get the extra little toxins from beer, which is worse than vodka because of the grains that are in it. What about food addiction? Is food addiction just because we have all these cravings because we ate fructose or we ate toxins and then we got cravings as a result or how does that work?

Mark: That's a great question. You know, Dave, what we're learning and since I wrote *The Blood Sugar Solution*, I learned that there's a whole bunch more research done on the biology of food addiction. Then I wrote the *Ten Day Detox Diet*, which gave people a roadmap to actually unravel why they're really so hungry and they're fat. How do we answer the question, why are we so fat? Think about it. There's 70% of Americans are overweight and it's not that everybody wakes up in the morning and goes, wait I want to be fat. I'm going to overeat today and I want to be fat. Nobody says that. Why is it that despite our best efforts we keep gaining weight? It's because the food that we're eating is biologically addictive from not just a metaphorical point of view but a literal point of view and then it turns on centers in the brain that stimulate dopamine. Dopamine is the pleasure molecule and it's the same area that gets stimulated with nicotine or heroine or cocaine. When you see that light up on a brain scan when someone's eating sugar, it's very convincing.

Dr. David Ludwig did a study where he took one group of guys who are overweight and he gave them different milkshakes. One day he gave them a milkshake that was a low glycemic milkshake, meaning it didn't raise the blood sugar quickly. Another day he gave them a high glycemic milkshake that raised the blood sugar quickly. The milkshakes were identical, same calories, same amount of proteins, same amount of fat, same amount of carbs, same amount of fiber. Everything held exactly the same except they used a different kind of starch, a slowly digestive starch in one of them for the sugar. They didn't know which one they were eating, ones that had the high glycemic milkshake, they were

hungrier, they're insulin went higher, they're blood sugar went higher and 4 hours later their brain scans looked like they had just take a load of heroine. That's what happens when you eat foods that are high in sugar.

It's not that sugar is bad. I love sugar. Everybody loves sugar. Nobody listening to this podcast thinks that they don't like sugar. Everybody loves sugar because we're programmed to love sugar. The problem is we're eating it in pharmacological doses, right? We're eating 152 pounds of sugar and 146 pounds of flour per person per year. That's almost a pound of sugar and flour combined for every man, woman and child. That's a drug dose, right? If we think of sugar as a recreational drug, fine. I like tequila but I'm not going to walk around all day with a glass of tequila drinking it for breakfast, lunch, and dinner, right? We eat sugar for breakfast, lunch and dinner in America. That's the problem.

Dave: It's okay to do just a couple lines of sugar?

Mark: Yeah just a couple lines. Just roll up a hundred dollar bill and snort it. That probably would be the best way.

Dave: It's kind of funny because when you're trying to be in ketosis, the fat burning mode where you've really cut the sight, you have to really be religious about even if you eat a tablespoon of sugar, but if you're reasonably metabolically healthy and you have very small amounts that naturally occur or might even be in that barbecue sauce or something, you're probably not going to die from that, right?

Mark: No, no. I mean I think it's about resilience like I said. I know for example, I'm very fit and I just rode my bike 25 miles and I have very low body fat and I have very high Bo2 max. I burn my calories very well. I fixed my metabolism so it works really well. If I want to have something sweet like a bunch of chocolate, I'll eat it. I'm not going to worry about it. The other night I had a bowel full of chocolate and berries, it was really great. I don't hit on myself. I'll never want a piece of cake. I'll never want a muffin. My body just doesn't even think about it anymore. In fact, somebody served a giant piece of cake the other night at some event and

I was like, "No thank you." It wasn't like I was depriving myself, I was like why would I want to eat that? That doesn't even look good to me.

Dave: You must see this with your patients all the time, for me it was always a bagel, a cookie, a piece of cake, like I want that. When I first went on this 15 years ago, it was an act of willpower and at some point when you get your nutrition and your micronutrients and your macronutrients right, your getting enough healthy fat that your biology is satisfied, I look at those things and it's not food. They don't register in my body. It could be a rock or it could be a bagel, but neither one has any attraction unless I want to throw it at someone.

Mark: It's very true. You rewire. I realize we needed a radical approach, which is a medical sugar detox essentially. I learned how to do this in my practice over many decades and looking at the science. I basically designed a medical sugar detox, which is the Ten Day Detox Diet, which is a book and it's available at tendaydetox.com and essentially it's looking at how do we, using science, reprogram our hormones and our insulin and our brain chemistry very quickly because you don't want to have this be a long painful process. All it takes is ten days and within the first 3 days most of all the cravings are gone and people start to feel better and by the end of the 10 days you really rebooted your whole system. It's like all your computer programs are all not working and just kind of spinning and what you have to do is just a reboot. You have to restart the whole thing. When you do that you get a fresh start and then you get to see actually how good you can feel.

When we did this, we had 600 people do it, not only did they lose like 4000 pounds and they dropped a lot of weight, they're blood sugar dropped 20 points on average, 10 points of blood pressure dropped, but we did a medical symptoms questionnaire where they tracked how they felt whether it's headaches or joint pain or depression or insomnia or irritable bowel, whatever it was, there was a 62% reduction in all symptoms from all diseases in 10 days. Some guy came up to me the other day and says, "I did this for 10 days. I have rheumatoid arthritis, all my pain went away is that possible?" I'm like "Yeah it's possible, because the body wants to be healthy." Illness is just a body's best

response to a bad set of circumstances. You change the circumstances; the body wants to get back to health.

Dave: That's a powerful statement, that the natural state is health, because no one ever taught me that. I don't ever know that I ever knew what it even felt like because you just assume that whatever you have is that state and you're probably wrong unless you're doing some very specific practices like the ones in your book, The Ten Day Detox or the ten day sugar detox is a really good idea and it's worth doing if, as your driving listening to this, you're drinking a big gulp, it's time to get that book because you can feel very very different. We have all this obesity going on and it's very easy to spot when you get people with massive roles of fat coming down over their waistband, but there's also this concept of skinny fat when you've got all of the fat packed around your organs but you still look good. Is skinny fat real? What's your medical perspective on that and how do people know if they think they're thin but they're actually skinny fat?

Mark: It's actually also called tofi not to be mistaken for tofu. Tofi means thin on the outside, fat on the inside.

Dave: Oh I love it. T-O-F-I. Okay.

Mark: Thin out the outside, fat on the inside and it's very real. In fact, many ethnicities have prediabetes or type 2 diabetes at much lower weights. For example, Asians, Chinese, Japanese, Indians, and very very low body weight but they still will get it because the fat deposits around their organs. Even though they might not be actually overweight, they're over fat. They have lost muscle and replaced it with fat. That happens particularly as you age. A lot of people might be the same weight they were when they were 25 at 65, but they might be twice as fat and metabolically when you check their blood work they actually look like they have diabetes. They have prediabetes. They have insulin resistance. They have abnormal cholesterol, high triglycerides, high blood sugar and they look thin. It basically affects about 25% of the thin people. There's only 30% of the population that's thin and 25% of them have skinny fat syndrome.

Dave: 25% of thin people have skinny fat?

Mark: Yes.

Dave: Unbelievable. I didn't realize the instance was anywhere near that and as someone who used to weight 300 pounds with size 46 was the largest pants I ever had to buy, I never had to deal with skinny fat myself.

Mark: No it's true. You can do DEXA scans and you can see where the fat is. I used to work at Canyon Ranch and we could see actually where the fat is distributed. You might have skinny arms and legs but you have all this fat around your organs. That's the dangerous fat, we call that B-A-T or BAT, brown adipose tissue.

Dave: It's funny you mention DEXA. That was my next question, was what's the best way of determining body fat in your clinical experience?

Mark: It's a DEXA scan.

Dave: It is DEXA.

Mark: [Inaudible 00:25:38] low-density x-ray. You have to get like 50 scans to equal one flight across the country or one chest x-ray and it looks at the distribution of fat and also the composition of your body. You can see things that you would be able to be surprised about. Someone who's thin who has tremendous amounts of body fat and you can't actually tell by body mass index because Shaquille O'Neill has a body mass index of 35, doesn't mean he's morbidly obese, just means he's got tons of muscles. The body composition is really the key.

Dave: I have a Nintendo Wii, which I like it because it's a biofeedback machine. If you want to train your balance you can stand and watch how you wobble and anything that gives me real time bio feedback about how I move or how I think is fair game for biohacking, but my little icon there when I type in my proper height and weight draws this round fat little man and I'm like screw you guys man, I happen to be a little bit muscular. Exactly those tables are totally wrong.

Mark: That's funny.

- Dave: Now when you talk about detox, there's two different meanings of that word, one is Betty Ford, which is the drug side. The other one is like drinking a bunch of lemon juice and stuff like ...
- Mark: And enemas and colonics and right.
- Dave: Yeah exactly. All these different nuances of detox, what is your detox?
- Mark: Well what I'm actually talking about is the Betty Ford of sugar.
- Dave: I love it.
- Mark: It's actually not a juice cleanse. It's actually not about restricting what you're doing. Those have their place and they can be useful for some people but I think most of us need to figure out how to eat food in a way that makes us feel good. When I realized that if it's really true that sugar and refined flours and certain processed foods are biologically addictive then people need a medical detox and they need to do it in a way that's not going to make them feel horrible. When we bring someone into the E.R. room who's had a heroine overdoses, or who's alcohol addiction we actually bring them down slowly. We use certain kinds of strategies to help them slowly detox so they don't go into severe withdrawal. That's exactly what the 10 day detox diet is, it's a very strategically designed day by day, every day has a certain structure and certain things you do to actually reset your systems so you actually feel good.
- Dave: Now 10 days isn't enough ...
- Mark: It's not a calorie-restricted diet or a fat or carb or anything restricted. You get rid of junk and you get rid of certain groups of foods and you eat whatever else you want. It's just lots of delicious, amazing, wonderful food.
- Dave: If you do that program by the book and do the program, you'll feel the difference. There's no one on earth who doesn't feel better in 10 days of eliminating the crap and anti-nutrients from their diet. How do people transition off of a 10 day detox like that? If they go back the next day to Frito-lays and Coke, obviously they're not going to continue the benefits, but how much wiggle room do you have?

- Mark: You go celebrate at McDonalds and have a Big Mac, fries, and a milkshake that's exactly. Actually I encourage people to do that, you know why? They get violently ill. They go, whoa, they kind of get what they're doing. We actually have in the book we have a transition plan, so depending on your goals. If you're a type 2 diabetic or you're 300 pounds, you just stay on it, right? Until its reversed, it's reversing it. We're working on actually research now to show how we can reverse diabetes. We can. We see it all the time people get off insulin. It's very possible. People who have less weight to lose or maybe are prediabetic, they would go on a modified version of it, maybe add back certain food groups and then if you just want maintenance and did it for just a reboot, you go back to eating healthy real food which is a varied diet including good clean animal protein, nuts and seeds, lots of vegetables, fruit and moderate amounts of grains and beans.
- Dave: That's interesting, the grains and beans, I'm assuming still gluten free or are you allowing gluten for some of the people?
- Mark: Yes I think if you can get heirloom gluten, it'd probably be good. People tell me all the time, it's interesting I have patients who are gluten sensitive, they go to Europe and they don't get sick. I miss too, you go have a baguette in France and you don't get sick because the wheat's different. They don't allow GMO there.
- Dave: There's 3 variables and I've noticed the same thing there. I've dug in on that so much and I'd love to get your take on this about these 3 variables and see from your medical experience, which goes much deeper, whether one of these is more important than the others. There's the species of wheat for sure, there's the storage conditions in Europe, so the type of fungus and all stored grain gets fungus at some level. The species there are very different and we actually track global maps of what species are growing on what commodities and what regions so we tend to have a very aflatoxin focus North American thing in grain for instance and fusarium in corn, but in Europe, it's different mix.
- Mark: Yeah blue cheese.

- Dave: Exactly. That's part of it and then the species of yeast that we use in the U.S. because we're always in a hurry so we have this genetically modified like turbo rise yeast but in France, ah we waited 4 days because the cheese had to ferment or whatever, but it takes a lot longer for the bread to rise because it's a more gentle yeast and I never could tell for me, is it the species? Is it the contamination in post harvesting storage or is it the fermentation process for the breads? Any ideas?
- Mark: Probably yes. It's all of those. I think it all makes sense. What most people don't realize is that food is not just calories it's information. It actually contains messages that communicate to every cell in your body, to your genes, affects gene expression, not in an abstract way, but in a literal real time way. The importance is to really focus on the quality of the food you're eating and where it comes from and what it's about. Most of the foods, we're eating in American are kind of weird foods. They're kind of Frankenfoods. When you go to Europe they have a lot traditional, local, heirloom foods. They don't even call it that. The food that your grandmother ate was all organic, all heirloom, right, and was all local pretty much. Now it's a big fancy thing to have local, organic, and heirloom foods, but that's all we used to eat.
- Dave: Our grandmothers also didn't eat Thai on Tuesday, pizza on Friday, sushi on Wednesday and one of the things I'm learning as I dig really deep on what's going on inside the gut bacteria is that when you eat a traditional set of foods regularly, your gut bacteria change themselves to be better at eating this. If you eat seaweed everyday, you get species that digest seaweed and you get more energy from them. Are we completely messing ourselves up especially in the U.S. because we just eat random foods from random traditions from random sources, kind of all over the place?
- Mark: That's an interesting question. I hadn't thought of that, but you basically change your gut microbiome with every bite you eat. You are literally gardening, it's your inner garden and if you fertilize your garden with certain foods, you're going to get certain plants, right, or certain bugs. What you eat is critically important to maintain the health of your gut floor. Most of us don't give 2 seconds of thought to that. You're really only as healthy as your gut is healthy and that's what we're learning and

we're starting to map the gut microbiom, it's one of the most fruitful areas of research. In functional medicine we've been addressing the gut for 30 years as a way of getting people healthy and it's probably the most important thing I do to change peoples lives is to fix their gut. Whatever is wrong with them, I start with the gut and start with their diet and almost 90% of it goes away. It's pretty stunning.

Dave: We could probably have a whole podcast about just fixing guts so I'm not going to go into all the questions I would have.

Mark: Yes. Let's do one. I would love that. That's my wife's favorite topic. They used to call me Dr. See every poop.

Dave: That's a great name. Alright, we'll do that. I've got my u-biom results and I've been working on fixing my gut for years so I would love to have you back on in a few months and we'll dive deep on poop.

Mark: Okay, we'll talk you know what.

Dave: In the meantime, in the time that we have left today, I want to talk about another potential source of food cravings. It's one that I've identified in my own life and when you're sensitive to an environment allergen, whether it's pollen or whether in my case toxic mold that's growing in a house, I might feel the sneezes or whatever, but after that I usually get severe sugar cravings and I don't have sugar cravings. They're not natural for me. There are things in the environment that are triggering this. You're going to be in the upcoming mold documentary that I'm putting together to document how this part of the environment is hacking our genes and our gut biom without us knowing it, but do you experience this in patients, that allergies trigger cravings?

Mark: Absolutely. Where I see it most is food allergies. For example, if you're allergic to dairy or you're allergic to gluten and you eat those things, you crave more of them. We in fact now that gluten and diary contain peptides that are partially digested called gluteomorphins and casomorphins that act like heroine or morphine in the brain and actually make them crave these foods. When you take for example kids off of diary or wheat, they often go crazy. You see them kind of have

nutty responses to withdrawal. Yes, there's a real connection between craving foods and being allergic to them. In terms of environmental allergies, like pollen or dust or mold, I don't see that as much but I might not just be asking the question. I think it's an interesting observation that I probably would say it's probably related to inflammation. When anything causes inflammation in your body, it causes insulin resistance, whatever it is. If it's an environmental allergen, if it's an infection, a virus, a toxin, or sugar and it causes inflammation, it will cause prediabetes and insulin resistance and that will actually lead to more cravings. That's actually probably what's happening.

Dave: I think you're onto something. I'm funding some research with Richie Shumaker where we're finding people and we're actually going to look at their inflammation markers in response to food based molds when we know they're already allergic to them to see if the same inflammation is happening, particularly in the brain that we believe may be happening. We're going to get some hard data and put that out there. I think that's going to be transformative because there are lots of different things you can be allergic to in your food and if something that grew on your food or something that was the food itself, the mechanism of action where the liver's like, I got to get rid of this stuff give me more glucose we don't have any glucose, it's so complex and fascinating, but it feels like there's a lot of room for increasing the quality of people's lives and that's where it gets.

Mark: Absolutely.

Dave: Well we're coming up on almost the end of the show. We have about 4 minutes left and there's a question I think you're going to take 4 minutes to answer so I'm going to ask it now.

Mark: If I talk fast maybe only 3 1/2.

Dave: The question is, in your entire life experience, not just as a physician, but everything you've learned, your top 3 recommendations for people who want to perform better. If you want to kick ass, I don't mean on the sports field, I mean you want to kick ass at being a human, doing

whatever it is, whether being a mom or dad or being a doctor. What's the advice that matters most?

Mark: I think the advice that matters most is eat only real food, nothing with a label. Except foods that you sell on your site.

Dave: It is possible to find some good stuff, but be selective.

Mark: Yeah it is. The general principle is an avocado doesn't have a barcode. Almonds don't have nutrition facts label. A piece of chicken doesn't have an ingredient list. Try to eat things without ingredient list, barcodes or labels. That means eat real food. Especially in terms of the food aspect I'm going to put a food note on that, it should be very low glycemic, meaning very low sugar or what turns to sugar, that's really important.

The second is move your body. I think that's something that people don't do enough of. We sit an average of 8 hours a day. There's about 12% of Americans that get the minimum amount of exercise you're supposed to get, that means 88% don't. I think exercise is not a strategy for weight loss, by the way, but it's strategy for longevity, for good health, for happiness, for removing depression and everything else.

The third thing is and it's sort of a combination of learning how to reset. That means, whether it's sleep, whether it's meditation, whether it's yoga, you need to learn the skill that you like to do that will help you reset your body from the automatic stress response we have to a relaxation response. Those 3 things are the most powerful tools you have for prevention and for the reversal of disease.

Even sleep I'm just going to give a footnote on. I think most of us don't get enough sleep. We need about 7 or 8 hours of sleep. Many of us are short changing ourselves and we think we can function well and we don't. I think if you really want to enhance the quality of your life and prevent disease, sleep is a critical factor.

Dave: Do you track your sleep?

Mark: I don't but I have one of those job own up things and I want to wear it, actually. I have a first generation one; I have to get a new one.

- Dave: Yeah the new ones are better or if you want to go really hard core, there's a company called Beddit that has a sticker that goes underneath your top sheet, it goes on your mattress itself and then you never have to do anything after that. You wake up and there's an email with a graph of your heart rate variability all night long, temperature, light, sound. It's amazing. For you, the data would be very rich.
- Mark: Beddit?
- Dave: B-E-D-D-I-T. Buy the professional version so it's Ethernet. You don't have to have Wi-Fi cooking you or anything. The reason I ask there is that I've been looking a lot at what nutrient timing does for sleep. How do I increase the sleep efficiency because I did do 5 hours or less per night for 2 years straight, largely to try and make myself gain weight on less quickly than I should have based on calorie intake to sort of show that calories in isn't really a useful way of losing weight. What I found was I felt for me ...
- Mark: The kind of sleep ... you were trying to sleep less to lose weight?
- Dave: No to gain weight. I was trying to get fat. I was eating 4,000-4,500 calories a day. I was sleeping 5 hours or less and I was minimizing exercise thinking, oh look I'm only going to gain 3 pounds in 60 days and I should have gained 20, therefore maybe the way we think about weight loss doesn't work. What happened was I actually lost weight and I felt amazing and I did it for almost two years. I don't know that it was great for me. I tested my cortisol, which was low. I tested my autonomic nervous function with a 24-hour stick on monitor, all this stuff and it's not to say you only should only get 5 hours but the tenant that healthy people require less sleep to be resilient feels true. Is there some sense to that?
- Mark: There maybe some truth, but it's also variable depending on the person. Bill Clinton says he slept 4 hours a night but he got into a lot of trouble. People like Einstein slept 9 hours a night
- Dave: It is very personal.

Mark: Very very.

Dave: I agree.

Mark: I met a guru who says he sleeps 2 1/2 to 3 hours a night and says he feels great. I'm like wow I want that.

Dave: Sri Sri Ravi Shankar from the Art of Living Foundation is one of those guys. He's taught 25 million people how to do relaxing breathing exercises and I've met several times in person and he really does like fly to a new city every single day and he falls asleep for an hour a day and when he does all of his support staff's like, "Everyone quiet. He actually fell asleep. It's amazing." and then he'll wake up a little while later and just go right back into it. I'm not there yet. I don't think you are either, right?

Mark: Oh no. I wish I was. I would've written more books.

Dave: Exactly, there's always some useful thing to do with the time. Mark, it's been a pleasure. It's been fascinating to have you on the show. I look forward to doing another one with you specifically focused on fixing the gut. Would you tell the listeners your urls and the titles of your books? We'll put all these in the show notes; we'll link to them but just read it out for people who are driving.

Mark: Sure. My main website is easy, it's just drhyman.com. That's D-R-H-Y-M-A-N.com and you can also go to tendaydetox.com. My most recent book is the Ten Day Detox Diet as well as the Blood Sugar Solution. I also wrote one on faith based wellness called the Daniel Plan with Rick Warren, which was really about using the power of community, using friend power not willpower to get healthy.

Dave: Mark, I'm a big fan of your work. Thanks again.

Mark: Thank you so much, Dave.



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