The Case Against Sugar:  
An Interview With Gary Taubes  
By Dr. Joseph Mercola

JM: Dr. Joseph Mercola  
GT: Gary Taubes

JM: Very few people would argue that excess sugar, or certainly refined sugar, is pernicious to our health. However, hardly anyone is aware of the massive fraud, manipulation, and deceit that the industry has initiated to insulate us from this truth. This is Dr. Mercola, helping you take control of your health.

Today I’m joined by Gary Taubes, who is probably well known to most of you. He’s an investigative journalist and he’s written a new book, The Case Against Sugar, which is by far, no question absolutely, the single best copy I’ve ever read on documenting how the manipulation or fraud with the sugar industry has occurred. It’s just full of great surprises. Welcome, and thank you for joining us, Gary.

GT: Thank you, Dr. Mercola, for having me.

JM: Okay. Maybe we can go a little bit about your history because probably some people don’t know who you are. I’m sure they’ve heard of you. But my understanding is that you’re an investigative journalist and really initially started in physics to debunk the cold fusion theory. What I’m unclear is how you progressed into health. Maybe you can share your story with us.

GT: My educational background was in physics, engineering. I went to journalism school. Early ‘80s, I went into science reporting. By mid ‘80s, realized that there was really a call for investigative science journalism. Scientists often get the wrong answer and occasionally when they get the wrong answer, they prefer not to tell people or to obfuscate. Just like in any other field, investigative journalism can play a role.

By the late ‘80s, as you pointed out, I did my second book on this scientific fiasco called “cold fusion”. I had a lot of fans in the physics community and nuclear physics community who liked what I did. Some of those guys said to me, quite literally, if you’re fascinated with bad science, with what they call pathological science, which is the science of things that aren’t so, you should look at some of the stuff in public health. It’s terrible.

Beginning in the early ‘90s, I started reporting on public health and indeed a lot of the rigor and rigorous methodology that I have been told was absolutely fundamentally necessary to get a reliable result was considered sort of a luxury that you didn’t have to do in public health research. It was too hard. It was too expensive, so you don’t have to do it. As a result, as I learned through the decade that followed, a lot of the fundamental tenets, our belief system about what constitutes a healthy diet, was based on very shaky evidence. Evidence that I think would never even get into a court of law, let alone convicted in a court of law.
By the late ‘90s, I was looking into the idea that salt causes high blood pressure, and dietary fat causes heart disease. I did a series of very long, investigative, award-winning reports for the Journal of Science. By 2001, I had done an infamous New York Times Magazine cover story called “What if It’s All Been a Big Fat Lie?” Perhaps the most controversial piece they ever ran.

Since then, I’ve been 100 percent working on this nutrition research, two books that preceded the latest: Good Calories, Bad Calories: Fats, Carbs, and the Controversial Science of Diet and Health, and Why We Get Fat: And What To Do About It. Now I’m just focusing in on sugar and why we probably should consider it the primary evil in our diets, despite the half century of bad science and ambiguous evidence.

**JM:** That’s what we want to do today, is go into some of those details. It’s a fascinating read. So many great points I definitely want to focus on today. You make a pretty strong argument that is sugar, excess sugar, is the fundamental cause of diabetes, obesity, and pretty much all chronic degenerative diseases, including Alzheimer’s and Parkinson’s.

Actually it’s a similar argument. This is one of the points that I wanted to review with you is the incredible similarities between the sugar industry and the tobacco industry. Some of the – it’s the same flawed tobacco science that was used to support sugar. Maybe we can start at the beginning because what’s really intriguing is the connection between slavery and how big sugar was the equivalent of big oil a century ago. That catalyzed so much social transformation, so there’s so much history to this. Why don’t you enlighten us from your perspective?

**GT:** That’s one of the things we tend to forget in telling this story. I wanted to bring it back into it in my book. That sugar was one of three or four different sort of drugs, for lack of a better word, that came out of the tropics with the colonization, the Americas, Asia, the world wide trade in the 16th and 17th century, and then changed the world. Sugar, caffeine, nicotine, alcohol, to some extent, various drugs like opium, all sort of spread from where they originally colonized to the tropics, to the Americas, and then back to Europe and back to Asia. Constituted – basically, they were the trade on which empires were built.

Sugar was particularly unique and that’s because cultivating sugar’s an unbelievably arduous, painful, difficult job. As such, you couldn’t really pay anyone enough to do it. You couldn’t find populations that were poor enough to do it naturally. Instead what happened, beginning actually with the sugar trade in the Mediterranean when it was controlled mostly by Middle Eastern populations, they started using slaves to cultivate sugar.

When we started cultivating sugar in the Americas and sugar came over on Columbus’ second voyage and was then first cultivated in Brazil by Columbus’ pilot, Vicente Yanez Pinzon, the Native American populations in the Caribbean and Brazil quickly died out from disease, from the arduous labor, and quite frankly, contact with us, with our ancestors. They imported slaves to the Tulum. I think it was 12 million slaves lived and died working in the sugar fields.

**JM:** Eighty percent of those slaves were results of their working in the sugar fields, right?
GT: Yes. By 1830, the emancipation movement beginning in the United Kingdom had finally put an end to the slave trade. It wasn’t obviously until the 1860s, in the Civil War, that the use of slaves in the United States ended. But this really shaped the culture. It told me, to me it said something about the context of what we were living to live with for our sugar fixes. Put quite simply, we were willing to enslave millions and millions of people simply so that we can get sugar shipped into Europe, sugar shipped off to the Americas. There was this triangular slave trade that sent sugar north to refineries.

Matter of fact, New York City, much of the wealth in New York City in the 18th century came from sugar refineries and many of the wealthiest families were originally sugar refiners. Then sugar and rum were sent to [inaudible 07:57-08:03] to the Caribbean and sugar plantations. You had this – basically the heart of commerce in 19th century was the sugar trade. The governments very quickly learned about U.K., and the U.S. government very quickly learned that this was the perfect item for taxation because all the sugar came from the Caribbean, from international sources. You can tax it coming into the country.

In a sense, our governments themselves got addicted to the money that could be made by allowing sugar to flow into the nation. This continued in the U.K. to the late 19th century when it was finally, the sugar trade or sugar tax, was finally shut down. But in the U.S., we never stopped with sugar tax, because it was simply too valuable.

JM: Interesting. I’m wondering if you, in your investigations in writing this book, if you’ve encountered any of the social commentaries on sugar. Because as you were discussing this, it occurred to me that I never really read anything about that. Did most of the countries know that slaves were actually responsible for their sugar fix, and they essentially ignored it or suppressed it? I mean what was the social commentary or setting around those times?

GT: Well, the emancipation is in the U.K. when they went after the slave trade. They did indeed boycott sugar for a while. They were aware of the price they were paying. Hard as it is to believe, there wasn’t the moral opprobrium against slavery. In the early 19th century and late 18th century, there was, was following the Civil War in the U.S. So it took the emancipation 20 or 30 years to get the point across that this is simply unacceptable practice. Regardless of the color of people’s skin, everyone is human and everyone deserves equal treatment before the law, and the right to control their own destiny.

[-----10:00-----]

What’s interesting is most of the books about sugar, the famous books about sugar, focused in on this history, one of the things I wanted to do when I wrote this book. They focused in on the slave trade, on the ethical-moral issues involved with sugar. I wanted to take that into the 20th century and really focus in on the health issues.

Previous books like the seminal classic, *Sweetness and Power*, by the anthropologist Sidney Mintz, spends 90 percent of the time, 90 percent of the book, on the early history of sugar up until the 20th century, and then there’s a little bit on the 20th century. I wanted to take it into the 20th century when you see these epidemics of obesity and diabetes appear, and discuss the implications.
JM: Why don’t we start there then? The entry into the 21st century, which is I believe about the time that the sugar industry really started to consolidate and organize and have a consorted effort to confuse, manipulate, and deceive the general population. Even to this century, just like in the last year, the funding that gets exposed. Maybe you can give us a little bit of historical context to framework it.

GT: Keep in mind that through the 19th century, there are a lot of people saying sugar is bad for the health. A lot of people, physicians, commentators, saying “Look, you start consuming sugar and we see men toil in illness, in depression, and cancer, and diabetes and disease.” Nobody was quantifying it, and nobody really understood what this meant. You could see them as sort of fringed voices in the newspapers. The sugar industry didn’t really have to consolidate many main ways because it was being coddled by the government. They liked to tax us and we’re coming in based from the sugar. It wasn’t until people started putting together the diabetes epidemics that they were seeing with sugar, which started happening in the 1920s.

Let’s talk a little bit about the history of diabetes here. The way we tend to think of it today is that diabetes and obesity are sort of exacerbated by sugar, that the problem is made worse. What I do is I suggest that sugar is the fundamental problem. By that, we mean add sugar to any population and sugar is the environmental trigger of this disease. You’ve got diabetes and obesity as rare as lung cancer would be without cigarettes, and then you add sugar. Suddenly, over the course of 10 years or 50 years, depending on the rate at which sugar is added in the genetic or genotype of the population, you see more and more obesity and diabetes emerging. You can actually see this in the literature in the 19th century.

One story I tell in the beginning of the book is of Elliott Joslin, who became the most famous diabetes doctor in the 20th century in the U.S. and around the world. When Joslin, he sees his first diabetes case when he’s in medical school, at Harvard Medical School in the 1890s, and then in 1898 with another physician named Reginald Fitz, a pathologist at Harvard.

He goes back through hundreds of volumes of handwritten records of the Massachusetts General Hospital, the primary hospital in Boston that came into existence in 1824. He looks at the patient records of every single patient at this hospital from 1824 to 1898, 48,000 records. He comes up with 172 cases of diabetes total. In fact, from 1824 to 1850, most years, there were zero cases of diabetes. Here’s a disease in which the sequela include kidney failure, amputation, gangrene, blindness, rotting teeth, eventually death. Yet these patients were simply not showing up at the hospitals. You find the – I was able to find a half-dozen different attempts to quantify the diabetes rates in the 19th century. Again, it was an excruciatingly rare disease. One influential British physician estimated that 1 in 50,000 individuals in the U.K. had diabetes. William Osler, the father of modern medicine in the U.S. who was practicing at Johns Hopkins, took the in-patient records from Johns Hopkins hospital in Baltimore from its opening year in 1889 to 1892, and found 10 cases out of something like 35,000 patients. Today, we’re talking about a disease that afflicts 1 in 11 Americans.
JM: Let me just – That’s full-blown diabetes. The pre-diabetic population is rapidly approaching 1 in 3.

GT: At least 1 in 3. Now we have a disease that’s everywhere. It’s an epidemic that’s emerged everywhere in the world. Native American populations are particularly hard hit. South Pacific Islanders are particularly hard hit. Middle Eastern populations are overwhelmed by these diseases. The latest estimate I saw from the World Health Organization (WHO) was 1 in 9 adults worldwide had diabetes, which I find hard to believe, but that’s the number that they’re putting down in their statistics. Yet again, 19th century, different methods of diagnosing it, different standards for diagnosing it, basically you would have to wait until people made it to the hospitals.

The point is they weren’t getting to the hospitals. Maybe there was something different with how hospitals worked in 19th century that I couldn’t identify. But you’re looking at in-patient records in the hospitals from around 1 in 3,000 or 4,000. In Veterans (VA) Hospitals in the United States today, roughly 25 percent, maybe 40 percent, of vets in the VA hospitals are diabetics versus, again, 1 in 3,000 or 4,000 in Boston in the 19th century. Something dramatic has happened.

When people really start putting this in the 1920s, beginning with the New York health commissioner, John Haven Emerson, who pointed out that in some of the statistics he had, there were 1,500 percent, 1,500 fold increase in diabetes rates in American cities since the Civil War. 400 percent increase is four-fold from 1900 to 1924. He said, “Look at it. The clear suspect is sugar.”

In this sense, I don’t actually blame the industry as much as I blame the scientific and medical community for what happened next. These people were clueless about how to do good science. They were clueless about critical skeptical thinking. I hate to speak poorly of them, but I guess I’ve done this my whole career.

As a result, what you have is – type 2 diabetes, which is a disease that by far the largest most prevalent form of the disease. It’s about 95 percent of cases that associates with overweight and obesity. These physicians studying and nutritionists who are interested in this issue on what causes diabetes said, “Look. Clearly obesity must cause it. Because this disease associates with obesity and obesity is caused by eating too much and exercising too little. And that’s all we have to know.” Therefore, sugar isn’t any different than any other carbohydrate, any other calorie.

We know in Japan, they eat a lot of carbs. They don’t have diabetes, and therefore we’re not going to blame sugar. This became the conventional thing in the sugar industry to catalyze this.

JM: Yes. The energy balance theory.

GT: Almost. It’s the energy balance theory. We’ve probably talked about it before, you and I. In the book, I referred to it as the gift that keeps on giving. Because once the obesity research has decided that obesity’s caused by merely taking in more energy than we expend. Therefore, all calories are equivalent. That became the defense of the sugar industry.
Beginning in the 1920s, you can find the sugar industry formed something called The Sugar Association. They put advertisements in newspapers, pushing sugar consumption when physicians in research are really beginning to get sort of suspicious about sugar and diabetes. They say, “Look. It’s not fattening. It’s low-calorie. A teaspoon of sugar is only 16 calories. That’s less than, you know. Five teaspoons have less or fewer calories than an apple. Therefore, enjoy your sugar. It’s all about calories.” Then they would advertise it based on this very substandard science at the time. Being beneficial, giving you more energy, which it does do in the short term, being good for colds and your immune system in the winter, and being good to cool you down with lemonade in the summer, and all series of ads.

They took the bad science as sort of nonsensical naïve concept that the obesity and nutrition researchers had come up with. That obesity is just an energy balance issue. They ran with it, and they continued running through it. As you pointed out, recently, last year, the New York Times reported that Coca-Cola had funded something called “The Global Energy Balance Network.” This was researchers who were going to point out that you don’t get fat or get diabetic because of how much coke you drink.

[-----20:00-----]

You get fatter and diabetic when you’re consuming more calories than you expend. Therefore, you should expend more and exercise. That was what, in a nutshell, The Global Energy Balance Network. Once Coke point out – once the New York Times pointed it out, Coca-Cola immediately realized that this was a bad public relations move and pulled back. The universities gave back the funding. But they’re still trying, and that Energy Balance idea, as long as it’s in place, it’s the defense against Coke. It’s not about Coke. It’s about too many calories.

**JM:** It’s still the strategy they use to this day. But I’m wondering if we can head back two generations ago, to the ‘40s or ‘50s, when two of the most prominent researchers/clinicians of the mid-20th century would be – the influence in this would be Dr. Ancel Keys and Dr. Frederick Stare from Harvard. He’s a PhD, Ancel Keys is an MD.

Now, Keys is – as many people are aware – responsible for the low – essentially catalyzing the adoption of the low-fat diet, which killed literally probably hundreds of millions of people in the U.S. prematurely. He’s actually idolized in the plant-based community and the vegans. They think he’s a great guy. He very well may have been because he promoted some good things like Mediterranean diet, which clearly has lots of benefits. But what they aren’t aware – I want you to expand on this point – is that his primary source of funding, almost his exclusive source of funding, was the sugar industry. How could you possibly be impartial if that’s your primary funder?

**GT:** Well, this is what – so again, this sugar industry, as I said, in 1928 or so, they founded The Sugar Association and the idea is to actually – well, we won’t get into that. Let’s just say that the Supreme Court put them out of business in the 1930s in their anti-trust measures. But then as World War II started, an interesting phenomenon happened. First of all, the U.S. government and the armed forces realized that some large proportion of the prospective troops is malnourished. Particularly, they have terrible teeth. They’re not going to be able to be drafted into the military as we needed.
During wartime, invariably during wartime, large sources of sugar shut down. In this case, south pacific island growers, Philippine sugar growers were clearly going to be lost to the sugar trade. The European sugar beet industry is going to be lost to the sugar trade. They know that they’re going to have to institute sugar rationing.

In order to do this, they start preparing for it by telling the Americans finally how bad sugar is for them. There’s a series of government reports, American Heart Association reports, and American Medal Association, that say “Look. You don’t need to eat sugar. Sugar is making you unhealthy. It’s the worst thing for you. It’s going to be a good thing when we go into sugar rationing.” The sugar industry is a little bit terrified about this.

First, because they don’t want to see people’s sugar habits change. Second, because they know from history that post-war, there’s going to be a lot of sugar on the market. This is going to be as bad as the absence of sugar during the war, so they want to make sure that they come out of the war with people eating as much sugar as they can force. Again, this is – whether it’s venal or as bad as the tobacco industry, I don’t know. It’s just business as usual for the sugar industry. Again, they institute this Sugar Association.

One of the things that they’re going to do is fund research – this is 1942 – to demonstrate that sugar is good for you, and also to look for other uses of sugar. Because they realized that if they come out of the war, people aren’t eating as much sugar, they’ve grown accustomed to low-sugar diets, therefore maybe we could figure out different ways to use sugar, like in paint, for instance, or other chemicals.

They fund major research projects at the biggest universities in the country, some of the most influential researchers working in that day. Harvard just formed a nutrition department under this young nutritionist named Fred Stare, and the sugar industry became one of their primary sources of funding from the get-go.

Ancel Keys of the University of Minnesota was in the process of launching one of the most famous nutrition experiments ever, his human starvation experiment, in which he semi-starved conscientious objectors to understand what the U.S. troops would be confronting when they finally liberated Europe and came upon one half-starved population after the other. That starvation study was funded by the, at least in part, funded by the sugar industry. The sugar industry would bring Stare and Keys to New York for press conferences to discuss this.

Again, one of the things we have to remember is that we tend to judge these people based on our moral standards of today. But in the 1940s, this was what business was and what academia was. The idea was you form nutrition research departments to create nutritionists who can then work for industry, and industry would help you fund this. Industry would benefit because industry was a good thing. It wasn’t until the late 1960s and the rise of Ralph Nader that the industry influence and academic research was seen as this pernicious involvement.

Beginning in the 1940s, we have the sugar industry funding Fred Stare at Harvard and Ancel Keys in Minnesota. Perhaps coincidentally, perhaps not, they became two of the most influential
nutritionists in the country as you put out. Keys, by pushing the low-fat dogma and vehemently arguing that the anti-sugar research was wrong, or the anti-sugar interpretations were wrong.

In the 1960s, there was a British researcher or British nutritionist named John Yudkin who was going after sugar with all the fervor, and I think far better science thanKeys was going after fat. The assumption was if Yudkin was right, Keys was wrong, which was a pretty good assumption. Keys went after Yudkin, and Keys was not that nice of a guy. He might – I mean it’s his reputation even from the people who knew him. He was kind of partisan that scientists would say the he doesn’t suffer fools gladly but often that’s just the sin in them. For – I can’t use that word.

**JM:** Interestingly, he lived to be 102 years old, I think.

**GT:** He did. To his credit – to his chief anti-fat assistant, anti-fat advocate, was a Chicago cardiologist named Jeremiah Stamler.

**JM:** Yeah. Northwestern.

**GT:** He’s still alive and probably pushing 100 today. But again, is that because they avoided fat? Actually in the ‘60s, when *Time Magazine* put Ancel Keys on the cover as the face of nutrition in America, they described his diet. They said he and his wife Margaret don’t eat roast meats like roast beef, pork or lamb more than three times a week. Today, most of us would think “Boy, if I have pork once a month or steak once a month, I’m killing myself,” and here Keys was only eating it three times a week. There’s a lot of fuzzy thinking with all these diets.

Anyway, Fred Stare. Let’s get back to Stare.

**JM:** Yeah. Sure.

**GT:** Fred Stare ran the nutrition department in Harvard. He considered it part of his business was to raise money from industry for the nutrition department. He talked about this proudly in his little memoir that he wrote. He raised millions from the sugar industry, from the cereal industry, and he was their man. He was the sugar industry’s man. When they needed something done to combat sugar – to go to Congress, talk on the radio, go on a TV show. He was a charming, good-looking guy. He’s very quick-witted. He was great to interview. He was the sugar industry’s man.

This was later exposed by about 1977 by Mike Jacobson of the Center for Science in the Public Interest. But for 20 years, virtually, Fred Stare and the Harvard Nutrition Department, funded in part by the sugar industry, pushed this belief that fat was the problem and sugar was harmless. They won. They just won. The Brits arguing that sugar was the problem doing research couldn’t sort of overwhelm this kind of Harvard-centric line that was funded in large part by the sugar industry. Again, I think Stare believed what he was saying.

**JM:** As did Keys, I’m sure. It’s really kind of tragic when you reflect on it because if our country had adopted what Yudkin was promoting, literally tens of millions of lives would have been saved, or more. Maybe a hundred million.
GT: This is the thing. One of the fascinating issues in all this is that – Sorry, I’m multitasking here. I’m trying to find a quote I want to get right. In the 1970s, sugar consumption actually started to come down. It was because of this anti-sugar movement. They knew it, and they put together this series of reports, very influential reports, with why Fred Stare as the point man at Harvard had a wide paper called “Sugar in the Diet of Men.” They paid all these researchers who believed that dietary fat was the problem to write a critical report about the sugar science, and to conclude that sugar was not. Basically, this was an early example of paying people to confuse the science.

[----30:00-----]

This report was then used by an FDA committee that was judging whether sugar was generally recognized as safe, and they concluded that it generally was because generally most researchers thought fat was the problem.

As sugar starts to actually dip in the ‘70s, the sugar industry launches its public relations campaign to boost its image to get the FDA to inadvertently go along. By the 1980s, we’ve embraced this idea that dietary fat is a problem and sugar consumption now starts to rise. The other factor there is, high-fructose corn syrup comes in in the late 1970s. When I say sugar consumption, I mean what the FDA would call pyloric sweeteners and that’s sucrose, which was what we think of as sugar and high-fructose corn syrup. I think one of the reasons that it really started to rise is that we just didn’t realize that high-fructose corn syrup was another variation of sugar.

JM: Well, and it was less expensive too. I mean the Japanese innovation of processing it that made it drop dramatically. It was inserted in almost all processed foods.

GT: Also the Reagan administration instituted the Farm Bill in 1982, a series of policies that guaranteed that high-fructose corn syrup would always be cheaper than sucrose. In the same way, by tariffing – putting heavy tariffs on the import of sugar – basically what the Reagan administration did was it guaranteed that the master producers of sugar would always make money. It guaranteed that corn refiners would always make money. Then it took away the imports. International sugar producers wouldn’t be able to sell in the U.S. as well, but our sugar producers would always make – they would never have a disincentive to stop growing sugar and trying to get us to eat it.

JM: Yeah. It’s still a powerful industry today. I live in Florida and there’s a large lake in Central Florida called Lake Okeechobee, which I suspect you’re familiar with. Largely because sugar is a big industry down here in Florida and they have these large fields that they use essentially [for] factory farming methods. All this fertilizer run off from the sugar, which is going into the lake, and then it goes to the rivers that feed it or feed into, causing a massive algae bloom. It’s just causing loads of problems. Unfortunately, there are some solutions we’re actually involved in, seeking to have some regenerative agricultural practices to remediate that. It could solve the whole problem. But it still stems from sugar.

GT: One of the issues that I wanted to do with my book is keep it short.
JM: It’s not short. It’s a good book.

GT: Yeah. Good Calories, Bad Calories. People say that this book is long but good. Now, I wanted a nice short [inaudible 33:16] of book. In fact, in an ideal world, it would have been 100 pages shorter. But had I wanted to write 1,000 pages about the evils of sugar, it would not have been difficult. The story in Florida and the fact the Cuban sugar family that in part controls Florida’s sugar is a terrific story. This was the person who Bill Clinton was on the phone with when Monica Lewinsky was in his office. He was this famous Cuban sugar refiner. From a narrative view point, it’s a great story, but I wanted to keep this book short to get the point across about…

JM: Yeah. You did a magnificent job. It’s just so enjoyable to read. It’s a hard book to put down because it’s just so fascinating. I mean you kind of intuitively suspect it, but you never really understood.

GT: Right. That’s how I felt about it.

JM: Terrific. Maybe you can touch on the sort of the historical – I mean you just started to discuss how sugar was just starting to decrease in the ‘70s and started to go back up in the ‘80s, and actually continued to increase for another 20 years or so. Now, it’s starting to come down. Maybe you can give us some perspective on that process, and what might be responsible for that shift in transition.

GT: This is what’s interesting. Again, in the ‘80s, it starts to skyrocket again. In part because of the success of this idea that low-fat is the problem. We should all eat low-fat diets, unaware of some of the repercussions of that like food. The iconic example of that is yogurt where you take some of the fat out and you add high-fructose corn syrup to replace the mouth feel and the taste and you end up with this fruity sugary yogurt that nobody knows is bad for you and can be pitched as a health food because it’s low in fat.

It’s funny – my wife – we had a meal delivery service that’s now here in Oakland where you get the ingredients to cook your own meal in the recipe. The one we were getting yesterday delivered a Greek dinner that was delicious, but they included this zero-fat French yogurt rather than full-fat Greek yogurt. I told my wife we’re done with them.

Anyways, so you have this phenomena where people take a little bit of fat out of the diet, they dump sugar back in, in the form of high-fructose corn syrup. You’ve got all these juices exploding: Snapple, SoBe iced teas, where all the calories are coming from high-fructose corn syrup but people don’t realize it’s sugar. This continues through the late ‘90s when suddenly we become aware, based on a couple NIH – excuse me – CDC reports that there’s an obesity epidemic. That first report in 1995 gets a lot of press in 1998. That’s the first time I reported it.

Suddenly, in 1999, sugar consumption peaks. Caloric sweetener consumption peaks in 1999 to 2000. Soda consumption peaks then as well, and it’s been coming down pretty steadily ever since. Part of what happened, I think, is that we became aware that high-fructose corn syrup was
also sugar. Although when I first started reporting this in the early 2000s, even most researchers didn’t understand that. I talked to epidemiologists at Harvard, gastroenterologists, people who were studying either fructose or high-fructose corn syrup or sugar, and they didn’t understand that they were all sort of roughly 50:50 combinations of the two.

As more and more articles are hammering on obesity as a societal epidemic, and it’s apparently, as more and more people are obese, it’s one of the first things you tend to give up as you start to get fatter. At least you don’t do it publicly as much as sugar. I think pretty much what we’ve been seeing since then is just an awareness that this has no place in a healthy diet, if you’re overweight, obese, or diabetic.

You saw the same thing happen in the ‘50s as we first started getting a lot of media attention on obesity. The nation went on a diet, which was how it was described in the media. One of the first things they do is switch from caloric sweeteners to non-caloric sweeteners. That’s what drove one of the other PR campaigns to the sugar industry in the 1960s was to get artificial sweeteners, particularly saccharine and cyclamate, taken off the market because they were eating up their market share.

The soda companies were just delighted. They didn’t care. They were happy to switch to artificial sweeteners, which were cheaper anyway. It’s up to the sugar industry now against the soda industry to basically fund research and lobby the Food and Drug Administration to get them to understand how potentially bad cyclamates and saccharin are. Then by 1971, cyclamates are banned and saccharin is tainted as a carcinogen. This is all fueled by sugar industry money going after what they saw were financial competitors.

**JM:** They quickly adopted an alternative, aspartame, which has its own pernicious history and then subsequently, sucrose on which I wrote a book on, Sweet Deception, which Johnson and Johnson, the manufacturer of Splenda at the time, threatened me with a 20 million-dollar lawsuit if I published the book by a 30-page legal document excerpt from a New York law firm. But I published it. I think we’ve been proselytized about the dangers of artificial sweeteners on the site, aside from writing books. There’s regular (exposure) – it’s not really my exposure but others. But clearly the soda industry has lost billions of dollars in decreased sales from artificial sweeteners. That’s a good direction.

Anyone who flies, if they’re observant, they could see when they go around and ask for drinks that there has been a radical decline in the number of people requesting soda. It’s relatively unusual. In my experience, it’s the minority of people who are now doing that. It’s usually water.

**GT:** Yeah. I think it’s interesting. I think the soda industry sees clearly that sugar and beverage industry clearly sees the writing on the wall. I think their activities now, like this crazy Global Energy Balance Network, to me are they’re just trying to delay the inevitable as long as they can. They have a fiduciary responsibility. Their taxpayers are widows of FBI agents killed in active duty, and therefore they’re going to continue selling this stuff as long as they can and as much as they can. But meanwhile, they’re diversifying badly.
I like to think back to the ‘70s and imagine the first conference room in which somebody suggests that they could sell, Coca-Cola or Pepsi could sell, bottled water. Like you can take water and put it in a bottle and make money out of it. This guy got laughed out of the office and has been unemployed ever since. While he’s watching now, billions of dollars, trillions of dollars going into bottled water.

[----40:00-----]

But even I noticed with the Olympics, if you looked at the Coke commercials on the Olympics, and recently they’re all about much smaller sizes. They’re now drinking what looked like – they maybe 8-ounce old-fashioned bottles of Coke.

JM: I don’t think it was your book but Marion Nestle’s recent book that actually addresses that. Even though they’re selling smaller amounts, they’re actually making more profit because of just the way the packaging occurs. They actually make more money on the smaller bottles.

GT: No. It’s quite possible. But there are a lot of changes. One of the things, again, that we didn’t realize is how the American diet sort of changed in shifts. Now, a lot of things happened. A lot of the things you discussed. Vegetable oils came in. We saw the higher refining of flours. You go from relatively unrefined flour to this vitamin-less, mineral-deficient white flour. Glycemic index is going up over the course of the century.

But one of the things that fascinated me was, again, how sugar consumption changed. Back, beginning even as late as the first half of the 19th century, sugar was so expensive that it was primarily still a luxury for adults. Kids got a little. When you bought it in a big tub at a local store and you brought it home and maybe the mother would bake with it. But there wasn’t a lot to throw around.

Then in the mid-19th century, 1840s or 1850s, the candy industry starts up. The chocolate industry starts up. The ice cream industry explodes all in this 20-year period. Then followed in the 1860s and 1870s begins the soft drink industry. All of this is targeted at children. Even when you think today, it’s funny when you look back at the candies, the chocolates, that we ate growing up that are still the primary brands today. All those chocolate bars date from 1890s to 1920s: the Mars bars, the Snickers bars, Mr. Goodbar. All of that was launched and it was all targeted at children. The only thing that got delayed was produces and breakfast cereals.

JM: Yeah. I definitely wanted to touch on those breakfast candies. That’s a fascinating story with Harvey Kellogg and the sanatorium in Michigan. I want you to show that.

GT: Yeah. Breakfast cereals come out of these sanatoriums, these health retreats in Michigan run by Kellogg and his competitor and former patient, Charles Post. They use the ideas – they thought dyspepsia, stomach indigestion, was a cause of chronic diseases, so they could cure dyspepsia and they could do it by putting a lot of fiber into the diet. Grape-Nuts was the first cereal that Post mass produced. He beat Kellogg, who then came out with Cornflakes. This was in early 1900s, 1898, right about then. But these are health sanatoriums and these people did not believe sugar was good for you.
In fact, the older Kellogg goes off to Europe, comes back and finds out that his younger brother was left in charge of the production of Cornflakes. He added sugar to the cornflakes to make it more stable because sugar is an incredibly useful product in foods. The older Kellogg blows up and gets mad at his brother, but then they leave it in because the customer likes it.

In fact, around 1905 at the World’s Fair 1904, the first really sugarcoated cereal was introduced as a dessert and nobody follows up on them because they don’t think Americans will ever eat this. If they don’t have it just too sweet, they would possibly eat this kind of junk regularly.

By the 1930s, a Philadelphia engineer sitting around watching his kids eat his cereal one morning and they’re dumping sugar into it and he’s horrified, this guy Jim Rex. It’s this amazing story because he’s watching them do it and instead of doing what I would do, which is like get mad at them and throw out the sugar because I’m a food zealot, he thinks “What if I could create cereal that’s already sugared? Therefore, I don’t have to watch my kids throw in sugar into the cereal bowls.” He does that. He’s an engineer and inventor. It’s got problems. It tends to stick together in the box. He sells it to a different entrepreneur. Eventually, it gets sold to Post.

Suddenly, during the World War II, the early years of the Second World War, following the cereal industry sent it in Michigan, General Mills, Post, Kellogg starts putting out sugar. It’s like an arms race. Once one does it, they all have to do it. You could see there’s a wonderful book written called Cerealizing America by a couple of sugar industry executives turned historians.

Time and time again, they have the nutritionists in these companies complaining, and then the promoters, the salesmen, the executives rationalizing why it is they have to make cereals that are as much as 50 percent sugar by calories. In the 1960s, it’s everywhere. Now, you have this massive explosion. Breakfast, as you put it, has been turned into, in effect, dessert, a variation of dessert.

Now, we’re consuming fruit juices, which come in – for fruit juices, we needed refrigeration and home refrigerators, which only started becoming very common in the 1930s. I don’t know if you remember, when we grew up, we used to buy frozen orange juice concentrate. It would sit in your freezer and you would take it out and you have to defrost it and then put it in the blender. By the 1960s, you’re beginning to be able to buy cartons of fruit juice, preserved. Now, dessert is orange juice, sugared cereal, bananas, It’s a massive dose of sugar.

I personally wonder how much of the obesity epidemic, which begins to explode in the U.S. in the late 1970s, was basically these children who, for the first time in history, were force fed on sugar for breakfast, and then the rest of the day coming of age. As they came of age, they manifested obesity. As the girls came of age and became women and then became pregnant, they passed this on to their children.

**JM:** Yes, indeed. That’s a fascinating story that you go into more details in the book. But I’m wondering if you, at this point, can also share information about the connection and the synergy between sugar and tobacco, which is not intuitive at all. Fascinating story of how you go into it and actually it’s responsible for increasing the use of tobacco. Interestingly, that same science
that the tobacco industry used to support their product is also copied or [inaudible 47:11] by the sugar industry to support theirs. It’s an interesting marriage.

**GT:** Yeah. It is an interesting marriage, which is a term that was used by a sugar industry executive in a report that he put out in 1950s. This is an amazing story. It’s one of the things that the internet has done for us as journalists. I don’t know if you ever read *Sugar Blues* coming up.

**JM:** Sure. William Dufty.

**GT:** Yeah, an anti-sugar book to the ‘70s. Gloria Swanson’s husband. He talks about sugar and tobacco. I remember 15 years ago trying to track down this story and I couldn’t do it so I could never confirm it. But now with the internet and the availability of all these, you can track down archives.

Now, there are documents that will allow you to confirm that story and even find it in books as well. Like a book written by White Gardener, who was head of tobacco research for the who was head of tobacco research for the USDA. This story was also told in *Monumental History of the Tobacco Industry* written by the Stanford Historian of Science, Robert Proctor, in 2011. But Proctor was focused on tobacco. He said, “Isn’t this fascinating?” [inaudible 48:21-48:22] Then let’s move on. I actually think this is fascinating. I’m going to tell this story even though I’m more interested in obesity and diabetes.

If you’re going to make the argument that sugar may have killed more people than tobacco, which is the argument I make, you might as well realize that tobacco wouldn’t have killed as many people as it did, not even close, without sugar. That’s actually a very safe argument to make because sugar gets a lot of credit for the tobacco deaths.

Big revolution in tobacco processing in the 19th century was something called “flue-curing tobacco.” Proctor refers to this as perhaps the deadliest invention in the history of mankind, worse than guns or nuclear weapons in how many people it’s killed. When you flue-cure tobacco, you dry the leaves over these heated iron plates. What this process does, aside from drying the leaves over the course of a week, is it primarily increase the sugar content in the leaves. Tobacco leaves, which might start out 50 percent carbs and 3 percent sugar, ends up at the end of this with about 22 percent sugar.

The equivalent is as the sugar industry documented, it’s like what happens to a banana as it ripens. It goes from something that’s barely edible to sweeter and sweeter the riper it gets. This was what happens when you flue-cure tobacco. Once you’ve got a high sugar content in leaves – this was particularly something called fruit-cured Virginia tobacco – you take tobacco that’s hard to inhale because it’s alkaline. The smoke is alkaline. When you have alkaline smoke, it irritates the mucous membranes and triggers your cough response. The higher the sugar content, the more acidic the smoke becomes and the easier it is to inhale, the easier it is to draw into your lungs.

What flue-cured tobacco did is they allowed cigarettes to be inhalable in a way that pipe tobacco or cigar tobacco wasn’t. Up until 1913, cigarettes were made from this flue-cured Virginia tobacco and you can inhale it. But the other problem is the Virginia tobacco has a very low
nicotine content. You could inhale it but it wasn’t very addictive. You didn’t have any reason to
inhale it because there wasn’t a lot of nicotine to get into your lungs.

[-----50:00-----]

In 1911, The Tobacco Trust is broken up by the Supreme Court. R.J. Reynolds is reformed and
its company that used to sell chewing tobacco known as Burlier Plug tobacco. It decides to blend
their burley tobacco, which they have a lot, with flue-cured Virginia tobacco.

The thing about this chewing tobacco is that it was marinated. This was another invention in the
19th century. This is what they called sugar sauce. You basically take these leaves which can
soak up 50 percent of their weight in sugar. You marinade them in sugar, maple syrup, licorice,
spices, and you get the wonderful taste of chewing tobacco. By doing so, you make the burley
tobacco inhalable. It gives it a wonderful aromatic taste, and the burley tobacco has a high
nicotine content. That nicotine is very available.

You mix the two and the first blended cigarette ever – it’s called the first American blended
cigarette, Camel is the first one produced in 1913 – you have a product that’s uniquely capable of
being inhaled, of getting large amounts of nicotine into the enormous surface area in the lungs,
and along with it, an enormous amount of carcinogens. It’s going to be the most addictive
substance known to man. Camels explode in popularity by 1920s as the most popular cigarette in
America.

By the 1930s, virtually every cigarette in America is a blended cigarette, mostly burley and this
flue-cured Virginia tobacco. Lung cancer rates explode. They’re virtually non-existent prior to
the first appearance with Camel. As Camels and the American blended cigarettes take off first in
the U.S. and then slowly round. It’s all based on the sugar content of the leaf. It’s an amazing
story.

Then in the 1950s, the sugar industry, when they’re worried about diversifying because they’re
afraid people are getting fatter consuming sugar and they’re going to consume less, what are we
going to do? In the 1950s, they’re probably saying, “Look, we take all the credit for the cigarette
explosion in the 20th century and cigarettes are going to be in place. We’re going to be able to
sell tens of millions of pounds of sugar every year as we’ve been doing.”

Then 1960s, a surgeon general pored on smoking, and cancer comes along. It becomes clear that
cigarettes cause lung cancer. Suddenly, the sugar industry doesn’t want to take credit anymore
for the explosion of cigarette smoking. Both the tobacco industry and the sugar industry go into
this sort of mode that we’ve come to associate with tobacco where you’re producing science that
is paid for with the goal of sowing confusion so that no consensus can be formed.

I think that the tobacco industry was much worse because the evidence against tobacco was
much more concrete. They knew. That all hinged on this issue on whether tobacco was addictive,
whereas sugar – I think clearly it’s addictive in some way. If you have children, you are going to
believe that sugar is addictive if you’re a rational human being.
JM: It’s the same story. I mean today, 21st century, we look back and wonder how the population could possibly not understand that tobacco was toxic and deadly. I think probably in the next generation, we’re going to look back and those individuals will look back at us and say, “How could you not understand that sugar was damaging?”

GT: I hope that’s true. I do think we’re getting there. I think we’ve reached the tipping point, like even my book is already kind of riding the wave. What’s amazing is how we managed to miss this for 50 years and it took a half dozen of us.

JM: Yeah, right. But it’s for the issues you so eloquently articulate and investigate in your book and expose. Thank you so much for exposing the tobacco connection. I just wanted to add that the 21st century understanding of that is that the influence of factory farming where they’re using these phosphate fertilizers, which were found out are actually contaminated with radioactive polonium, which may be a major factor for the increase in the cancer. It’s this radioactive activity that they’re inhaling into their lungs.

GT: Again, one of the messages that I took away from this is, first, understanding the relationship between diet, the environment, and our health is an excruciatingly difficult job. Something I repeat several times in the book is that we’re looking at – we’re trying to understand the cause of chronic disease that they take decades to manifest. We could do it either on animals, and then you never know what you learn in animals. Would that extrapolate the humans? Or you could do it over short periods of time. A few months, maybe a year. Then you have to wonder, try to extrapolate to decades.

The science is really hard and as a result, a good working assumption is to take everything with a grain of salt. But you have to establish certain inherent belief systems. A good one is that if we didn’t eat it 2,000 years ago, we might not want to eat it today.

JM: Let’s address some of your critics because it’s very clear that the sugar industry’s going to lash out. Even my own site when we had these anti-sugar articles, the American Beverage Association, can you believe it, they post comments supporting this global energy balance. It’s like they get egged like crazy but nevertheless, they still do it.

The sugar industry is going to come at you. They’re going to say that there’s no definitive proof. You admit in your book that you can see that point. But how do you address their skepticism in accepting what you’re really exposing?

GT: This is the truth. I do have a paragraph in the beginning where I say that I’m going to agree with what the defenders of sugar are going to argue, which is that there’s no definitive proof. If this was – I’d like to think of it as a legal case. If it’s a legal case, where we have the crime committed as millions, tens of millions, hundreds of millions of chronic disease deaths each year. In particular, obesity and diabetes, which we know are relatively new to the human species. At least the prevalence we see today. Something’s causing them. We want to know who or what’s responsible.
As I say in the book, in the way I think about it, what you’ve got is clearly enough evidence to indict sugar as the single prominent environmental trigger of this disease. But because of the problems with doing the science, kind of the fact that everyone consumes sugar. Unlike smoking, with smoking you could compare smokers to non-smokers. At least 50 percent of the population didn’t smoke. But virtually, everyone consumes sugar. Then when you find people who don’t, they’re ludicrously health conscious. They’re different in a lot of ways from the people who do.

It’s very hard to this science. Then you have to establish what’s the most likely scenario? That’s the best science can ever do. What’s the most likely scenario? What I’m going to argue in the book is that sugar is the cause of these chronic diseases. It’s so likely that regardless of what the sugar industry says about whether the proof is unambiguous or not, which I clearly agree, it’s not. You can make the decision, “Is this something I should be consuming a lot less of and maybe none at all?” I’m going to argue that that’s a reasonable decision. It’s a sound decision. It’s hard to imagine. I have caveats to this too. I mean it’s hard to imagine how you are going to harm yourself by not consuming sugar. The obvious thing to do was an experiment.

I used to be a smoker. A lot of what I – the way I think about this is informed by my history as a cigarette smoker. It took me 20 years to quit. The first three weeks after quitting is miserable. I mean all you think about is “not smoking, not smoking.” You wake up thinking about it. You go to sleep not thinking about it. After about three weeks, something happens where it gets a little bit easier. The next nine months – I actually had to warn my friend “Look, I’m going to be so cranky, so grouchy. I’m probably going to alienate you. Have patience and bear with me.” Then at the end of about a year, you’re kind of over the worst of it but you’re still susceptible to being sucked back again. Then you get to about three years and you’d think I can’t imagine why I ever smoked. I never want to smoke again. There’s no way in the world that I could get sucked back in.

I think the same thing could happen with sugar. The key is to experiment. I think the sugar industry should be – they can’t really argue against saying “Look. Just see what it’s like to live without sugar. Give it a few weeks. If you make a few weeks, give it a few months. Try to get to the point where you’re past the worst of the cravings. Or you can walk past the bakery, smell the morning bun and not want to walk in and eat it. At least be able to resist walking in and eating it.”

[-----1:00:00-----]

I think the sugar industry should also – as they point out that the evidence is not unambiguous, it’s incumbent upon them to point out what research should be done to resolve this issue. It’s not enough to say, “My client is innocent because there’s not enough evidence to convict them.” The point is there’s plenty of evidence. What would it take to settle this issue? You could do that with research, randomized controlled trials. These kinds of studies are very expensive.

Getting back to the 1970s, when the sugar industry was going after the anti-sugar people and they put together meetings and they hired scientist consultants and asked them, “What should we do?” The scientist consultants said this is an incredibly important issue. Do the studies necessary to settle it. It doesn’t matter what it costs. Don’t give it lip service. Spend the money. If it’s 100
million dollars, it’s 100 million dollars. Settle it, so we know whether or not your product is killing people. There’s enough evidence. You could still make that argument to the sugar and corn refiners today. Don’t tell us the evidence is ambiguous. We know that. But we think you’re killing us. What do we have to do to solve it, settle it?

**JM:** I agree. Let me just give you my viewpoint on the process because I couldn’t agree with you more with respect that sugar is a major variable in this equation. But it’s not just sugar. Obviously, there are a lot of other factors. But let’s just extend it slightly to refined carbohydrates and the fact that – and it’s not even just other types of sugars, but it could be starchy healthy vegetables.

But the fact that people are eating so many of these and their glucose levels, and glucagon – not glucagon – glycogen levels are so chronically elevated that essentially their body forgets the ability, as you well know, to burn fat. If you can’t burn fat, those cravings, you will always have them unless you get off of it. The part of the promise to get off of those carbs, start to burn fat, and then you can cyclically [inaudible 1:02:13]. That’s the strategy. To just stop sugar, it’s definitely going to help a lot of people. But it has to be a bit broader.

**GT:** There’s two issues. I discussed this in the beginning of the book. Because obviously I agree with you about what it takes to really prevent and treat obesity and diabetes and pre-diabetes, and it’s get off all these carbs. But the two questions, one is what causes it? What’s the environmental trigger? Fill in the blanks, if cigarettes are to lung cancer, blank is to obesity and diabetes. We ought to know what that blank is, because until we identify it unambiguously, we can’t solve the problem on a societal level.

Getting rid of sugar let’s say tomorrow, boom. I can magically snap my fingers, sugar vanishes. Nobody can consume it anymore. There are no sugary beverages. I think everybody gets healthier. But a large proportion of the population that’s already obese and diabetic are going to stay obese and diabetic. Now the question is what do you do for them? That’s where you have to get rid of conceivably all the carbs so that they can now begin to mobilize and oxidize their fat. Again, the evidence there is ambiguous as well, but I think it’s enough to make that statement. I believe in it and people can experiment.

You’ve got this one issue, which is what is the environmental trigger of the disease? I think it’s sugar. Add sugar to any population. Southeast Asians were already consuming a lot of rice and wheat and had a low-fat diet, but were relatively healthy until they started consuming sugar in quantities. The Inuit are consuming almost exclusively animal products from marine animals and fish and caribou. We add sugar, boom, you get the same diseases. That’s the issue this book is addressing.

Then the next step, preventing and treating individuals with obesity and diabetes metabolic disorders. For them, quite possibly, you want to get rid of all the carbs. But then again, obviously my first book, *Good Calories, Bad Calories*, was an implication of refined grain white flour as well. I’m not sure if any grain is good for you. But then again, that’s why they eat this.
JM: Well, if you can burn fat, you can certainly tolerate them. Probably it may be beneficial for an individual, although you can make them stronger by restricting gluten grains. But it’s interesting too is how you say processed sugar, and you do discuss this in the book, that sugar, I think as you mentioned in the book, is like 10,000 years old, at least from the records that we can tell. But it really doesn’t start to become a problem until they develop the ability industrially to process it and essentially produce as much in one day as what’s produced in a year.

GT: That’s true. But again, when you say it, it doesn’t become a problem on a societal level. But you go back to Hindu medical texts from 2,000 years ago. You’ve got them blaming, clearly identifying diabetes and obesity, and blaming it on sugar and white rice consumption 2,000 years ago. It might have only been one patient, one individual, in a 1,000 who was obese instead of 1 in 3. But that person would not be obese if it wasn’t for the sugar and the white flour in the diet. Again, the last chapter of my book is called “How Little Is Still Too Much.”

JM: Why don’t you address that? Because I think that’s a really important point. Great job.

GT: This is the thing. The temptation and lean people we say – this drives me crazy – appears to eat it in moderation. Everything in moderation. Sugar in moderation. It just sounds so reasonable, except you never defined what moderation is. Moderation is defined as the amount you can eat and not be fat or diabetic. Of course, that could be zero for some people, because some people are clearly genetically, epigenetically, programmed to become obese, and other people not.

The other issue that’s not taken into effect comes back to the smoking. Clearly, there’s a level at which you could smoke cigarettes and the increased risk to lung cancer or heart disease would be trivial and not worth confronting. Not worth dealing if you really like smoking. That’s probably true of sugar as well. Again, if you look it at a societal level, there’s a maybe 70 pounds per capita of sugar availability, and you start to see this explosion of diabetes. Maybe if you stayed below that, stayed at 40 pounds or 25 pounds per capita, which is about…

JM: Two or five.

GT: With two or five, you’d be healthy. But the question is when you have sugar around you everywhere. It’s the equivalent of smoking one cigarette again in a population or everybody smoking. Are you going to be able to stay at one cigarette a day? Or is it easier to just quit? Go through that experiment. Get over the addiction. Get over the craving and get to the point where you don’t want to smoke or you don’t want to eat sugar, because you know it’s going to ignite this craving.

Some people can clearly deal with moderate amounts of sugar, and other people can’t. I find it much easier to not eat any at all than to try and eat it in moderation. My wife can order a wonderful dessert in an expensive restaurant, take two bites, push it away. That’s the end of it. I am not her.

JM: Well, she probably has a very well-developed ability to catabolize and burn fat for primary fuel. She doesn’t need that. I couldn’t agree [more]. Small amounts occasionally are not harmful. In fact, they may even be healthy. I’m developing this hypothesis, it’s the feast-famine cycling
mode where you cannot just be completely taking high-fat and low carbs continuously. I’m convinced that is not a healthy strategy either. You need some healthy carbs, but intermittently, sporadically, cycling.

**GT:** It’s possible. Again, I would have to see clinical trials to believe.

**JM:** Sure, sure. I agree. From the science perspective, you know. But anecdotally, we’re finding this in pretty significant clinical populations. That’s the way that people are responding. They’re responding adversely when they don’t get any carbs and when they get them occasionally – I’m not sure if you’re aware, but I’ve pulled up some research recently. What is the speculated mechanism of how insulin works? What is the thought? How does it work biologically?

**GT:** Upregulating the GLUT-4 transporter.

**JM:** No. Actually, it’s traditionally thought that it increases the introduction of glucose into the cell, right? That probably is not the way it works. The reason it works is that it inhibits the hepatic gluconeogenesis. So that if you have very low insulin levels, for someone who’s not eating any glucose at all, I mean when you’re point one, then they can’t suppress their livers producing glucose, so you have high glucose levels, which is not healthy. As soon you have a little healthy carbs, your blood sugar drops like 20 to 30 points, which is counterintuitive.

**GT:** Yeah. I mean again, this is what I mean. This is very tricky science. Ultimately, what I end up asking is, “How do we know whether you’re going to live long?” So everything you can say is true. Step by step by step, but ultimately, what you want to know is if I do this, will I be lean or healthier and live longer or happier? Assuming that’s your goal. I mean some people would be perfectly happy with performance-enhancing drugs or foods that allow them to win the Tour de France and die at 40 of a massive heart attack.

[-----1:10:00-----]

**JM:** Didn’t you write that on your book? You quoted this study where a significant – I think half of the athletes – if they were given the choice to take something or do something that would allow them to win every race for the next three years and then die, would do it?

**GT:** I’ve never written about that but I wouldn’t be surprised. To achieve that level of excellence and—

**JM:** Half. Half. It’s crazy.

**GT:** Different standards, it’s a shame. What’s interesting, getting back to sugar, in the 1920s, sugar was treated as a performance-enhancing drug. I found these articles where there were the Harvard rowing coach was giving it to the Harvard rowing team to see if it would improve their performance. There’s a story about, I think it was a Yale soccer team or Columbia, about taking sugar before a game. They got whomped, 5-1, but they felt better. Back in the 1910s 1920s, this ability of sugar to produce free energy generally faster.
JM: That’s a good point too. Just maybe touch on this and then we’ll probably have to sign off. One of the reasons that sugar is so addictive is this connection with dopamine. You discussed that in the book, and actually how it improves or increases that, but then as like anything, just like insulin receptor’s sensitivity decreases with time. The more you use it, the harder it gets. Maybe you can address that and the connection to dopamine because that’s the feel-good hormone.

GT: Well, again, one of the arguments for why sugar is addictive is the research that implicates it. There’s a part of our brain, what’s called the reward center of the brain, the nucleus accumbens, which is the area of the brain that all addictive substances tend to trigger. They trigger dopamine secretions. The idea is originally these evolved to reward sensations that are absolutely necessary for the procreation of species. Sex and eating in particular, you feel the pleasurable sensation in the nucleus accumbens. You want more of it and so you continue to do more of these. Addictive substances are just substances that happen to hijack that mechanism.

Take humans throughout history. They try and taste everything. They find the things that promote this sort of exaggerated response in the nucleus accumbens, and that’s something they want to take or eject or refine and do again. Sugar clearly stimulates dopamine secretion in the nucleus accumbens.

What happens is with most of these substances is as it stimulates dopamine secretion, you need more and more of that substance to get the same response from the dopamine receptors, and then you need naturally occurring pleasures, sex and eating, don’t interest you that much. This would explain why alcoholics, drug addicts, etc. tend to be focused almost exclusively on the behavior that really triggers the nucleus accumbens and its dopamine secretion. It’s the same, to some extent, with sugar.

I do have a friend who points out that if you buy new shoes, that will also response in the nucleus accumbens. You can’t claim beyond a doubt that just because something triggers the dopamine response, that’s addictive. Although I know plenty of people who are addicted to buying new shoes. This is the idea.

There’s some French researcher, very little research on sugar addiction, which is fascinating. Again, nobody really cared until the 1970s, 1980s. The anti-sugar science was so strong that if you wanted to measure something or study something like sugar addiction, you were considered a quack.

There was one group that did this research at Princeton. Despite it being Princeton, I don’t think they were that good. Then there’s a French researcher in France who was studying sugar addiction in rodents, and found that you could basically addict a rat to cocaine or heroin. Offer it sugar instead of cocaine or heroin and it would switch to the sugar within a day. If it could only get sugar or cocaine, it would continue to prefer sugar over cocaine from then on end.

Again, there’s reason to believe that this is a highly addictive substance. But it’s also clearly addictive differently than these other substances.
JM: I think we’ve covered a lot of great points in the book. Believe me, there are more. We just don’t have time to go in [over]them. This is a great book. I really enjoyed it. I think it will play a significant role and those of us who are more academic and intellectual are in need to understand it in an intellectual level the reasons why. That could hopefully help motivate us to engage in a behavior that will eliminate sugar like Gary eliminated cigarettes so many years ago. As a result of that, we’ll start to feel good. Several years down the road, we say how can we possibly go there?

Believe me, there’s no doubt in my mind. I’ve experienced it in person. I’ve seen it in so many friends and families that have implemented that. When you eliminate these carbohydrates and change your metabolism with you burning fat is your primary fuel, those cravings disappear. They are gone. You do not crave these junk foods. It’s not a struggle. It is initially when you get there, but it’s not. It’s just as easy as can be. There’s no effort involved. But you have to make the jump, and the jump is a bit of a challenge.

Hopefully, Gary’s book will help you, The Case Against Sugar. Get it on Amazon now. It’s definitely a good one to have in your library for the reasons you just heard. Any closing comments, Gary, after mine?

GT: No. That’s all. You’ve pretty much encapsulated it, Dr. Mercola. I would add that even those of us who don’t necessarily need an intellectual awareness of this, understanding how we got here, the history, and arming yourself with these facts and the awareness of how we were brought to this place, or in effect, the entire population can be seen as not only being addicted to this substance but having been transformed by our addiction. Literally a different species that we were before sugar entered the diet. I think it just certainly helps me to understand this from a historical perspective.

JM: The reason being is that there is still a very significant portion of the population who does not accept what you’ve written on the book, who will vehemently argue. Very similar to the way that those who were in the tobacco industry in the ‘60s or ‘70s.

GT: Definitely.

JM: You’ve created a great resource to help catalyze essentially the understanding and practical limitation of this, which is getting rid of sugar. Thank you for doing that. It’s great.

GT: Okay. Thank you for having me.

[END]