

EPISODE 222

The History Of Sugar: Sex, Drugs, And Entertainment

Shawn Stevenson: Welcome to The Model Health Show, this is fitness and nutrition expert Shawn Stevenson here with my amazing co-host and producer of The Model Health Show Jade Harrell, what's up Jade?

Jade Harrell: What's up Shawn?

Shawn Stevenson: How are you doing today?

Jade Harrell: Today I am incredolorious.

Shawn Stevenson: Incredolorious?

Jade Harrell: Yes.

Shawn Stevenson: Alright, tell me about it.

Jade Harrell: Gloriously incredible today.

Shawn Stevenson: I like that, you threw the glory in there.

Jade Harrell: I did.

Shawn Stevenson: It's what this is all about, it's about that glory. Rain down on me. Everybody, thank you so much for tuning into the show today, we've got an important and powerful episode lined up for you on this day. And so today's show is very important because this is something that is a part of our culture, it's something deeply ingrained into the world as you know it, in ways that you have probably never paid attention to before, that we're going to bring to the light. And that is our societies, our worlds' connection and obsession with sugar. And so today's episode I'm going to take you through a history of sugar and where this whole thing started, and all the things connecting sugar into our lives today, today we're going to be talking about sex, drugs and entertainment.

Jade Harrell: Ooh sugar.

Shawn Stevenson: This wild history of sugar. And, you're going to learn some things that are definitely going to change the course of your life and your perspective about sugar and about even our food system today.

Before we do that, I want to give a shot out to our show sponsor onnit.com. Today I had their emulsified mct oil, which I have most days and so this is- first of all what is mct oil? So we're talking about medium chain triglycerides, and this is generally going to be something that is derived from coconut oil, and/or palm oil, and so these medium chain triglycerides are very important fuel for the human body, they are digested very differently than the long and short chain fats, and this is a very bioavailable almost instant energy source in many ways, because it bypasses the normal digestive process and it's in the certain size that it can actually traverse through your cell membranes and get right to your cells to give you energy, which is just fascinating itself, but also a little fun factors that it has a thermogenic effect, that means essentially boosting your body's metabolism right, that inner fire, and positively affects your metabolism.

Also mcts are supportive of your gut environment, it's very gut friendly and important, and this is something we talk about a lot in the show, this is a vast and brilliant microbiome is built in tropical rain forest, we are all living with inside of our own bellies and so, supporting that microbiome is of the utmost importance, and it's anti parasitic, antibacterial, antifungal, it has some really wonderful properties at protecting the good guys in your microbiome.

So this is why I love mct oil so much, and why I love it from Onnit is they have the emulsified mct oils that are basically like creamers, right, that you can add to your elixirs, your teas, your coffees, whatever you're into; my wife loves the vanilla flavor, she has that to her mushroom coffee, she does it on a daily basis, and I love the strawberry flavor, I'm a big fan of that, I like to mix it into like lion's mane tea and cordyceps tea.

Jade Harrell: We mix it into the breakfast muffins, and it's like a butter, it makes strawberry muffins, and they taste buttery, it's wonderful.

Shawn Stevenson: That reminds me of the Strawberry Quick, right, this is so far different than that, but I was killing the Strawberry Quick, and for people don't know what that is, it was like some random, all this stuff that's bad for you as a kid, is like they got a cartoon, right that bunny was so like, heeey, I am just going to give you diabetes, don't worry about it; but this was basically like a chocolate powder but it was tilted towards this kind of strawberry flavor, I was so into that. So now we can upgrade that in a big way by utilizing these mct oils, so make sure to head over there, check them out, it's onnit.com/model. You're going to get 10 percent off of all of your health supplements, they've also got the hemp force protein, the shroom tech immune, shroom tech sport, which is an amazing pre-workout.

So somebody actually just came over to me at the gym recently, who I didn't really know that they listen to the show, and they came up to me and they were like, "hey I just got on that that shroom tech, and I feel really amazing, like I've never had anything like it, I've done some pre-workout things that would make me feel kind of weird, and make me feel weird afterwards, but there's just like this kind of natural energy left and it's just sustainable, it feels good and I don't feel like it goes away and I notice it later." And so I was like, that's such a great story, so definitely head over to check them out onnit.com/model for 10 percent off, now let's get to the iTunes review of the week.

Jade Harrell: This is another great one. The title is "Feeling Fantastinewed". "Thanks so much for this incredible and entertaining podcast. I listen to each show and sometimes go back and re-listen to make show notes; I'm absorbing all of the info provided by Shawn, Jade and the amazing guests, and as a former college athlete, I thought I had my body and weight training figured out, I was sadly mistaken. The Model Health Show has helped me sustain a great lifestyle, in food and positive mentality towards all aspects of life. I can't recommend this show enough, it isn't a short term investment though, make sure you put in the work and then the long term, you will feel great." That's from Johnny Boy.

Shawn Stevenson: Fantastic, thank you so much for leaving a review, that means a lot.

Jade Harrell: Fantastinewed.

Shawn Stevenson: Is that like a fantastically renewed? I love that, thank you so much for sharing that, and that's just brilliant, I appreciate you so much, everybody thank you for leaving the reviews on iTunes, please keep them coming, if you have yet to leave a review, pop over there to iTunes, leave us a review, and we truly, truly do appreciate that.

And on that note, let's get to our topic of the day. So today, we're talking about the history of sugar- sex, drugs and entertainment. And we're going to talk about how this has become a really powerful cultural phenomenon, and something that is deeply ingrained in so many different areas of our lives, that we might not have recognized, and so to really take that and bring it to the surface. So I'm going to take you on a journey with me today, and we're going to start, we're going to go through a timeline and look at the beginnings of this substance, and the many different aspects that it's been able to influence along its journey to where we are today. And where we are today is probably going to knock you out of your chair as well, and so we're hoping to create a new future, and a new relationship with this sweet, sweet substance. And so we're going to start with just a really important caveat here, which is there are many forms of sugar, but today for our focus we're mainly going to look deeply into the history of what we refer to as "table sugar", and the sugar products that we use to sweeten our food and drink.

And this episode is going to be valuable because it looks at the parallels that we see with sugar in the worldwide obesity epidemic, which is one of the things that is kind of common knowledge now, but we're really going to drill down into that. And also, I think you will be shocked to find the connection between sugar and chronic illnesses, violence, and the connection between things like ethnic diversity. So today you're going to understand at deep fundamental level, how much sugar has impacted society as we know it. Let's start at the start.

Where did this whole thing begin, and really if we look at human physiology, we evolved on a diet that actually contained very little sugar, and there was virtually no refined carbohydrates at all throughout, we're talking about hundreds of years of our evolution. And in fact, many experts feel that sugar probably entered our diets by accident, and yet, humans- this is important to understand, yet we have sought out sweet things since our earliest days of evolution. And there's an evolutionary biologist at Harvard university, his name is Daniel Lieberman and he says that "sugar is a deep, deep ancient craving", and it's because sugar

signals something to our entire biology, and sweet signals something that is pretty important in our survival, which is it's a signal for a dense source of calories, it's a signal to our biology that there's a dense source of calories, i.e. energy. Plus, sugar offers far more than just energy, it also helps us to store fat too.

And if you look at again our survival, fat is pretty important, because when you eat sugar your body breaks it down into glucose and fructose, and fructose specifically appears to activate a process in your body that makes you want to hold on to more fat, and we're going to talk about them more today. And there was a time that hanging on to more body fat was actually considered an advantage, and not a health risk, and it was thanks to a mutation that upregulated sugar being stored as fat, to help to ensure the survival of our species. And this was a time when food was scarce and meals were inconsistent, it was a lot different, we're talking about hunting versus walking over to your refrigerator.

Jade Harrell: You have a hard at time not finding food now.

Shawn Stevenson: Exactly, exactly.

Jade Harrell: I'm trying to be away from food, oh my gosh.

Shawn Stevenson: Hunting is way, way more energy intensive than pulling up to the drive through, so we have to understand that hanging onto fat was more of an advantage. So sweet things in nature, like certain ripe fruits and honey to our ancestors were a jackpot. Now, though we've long had a desire for sweet things, we simply didn't have regular access to them. But that would eventually change.

And when we shift gears to the origin of sugar as we know it today, it's mainly extracted from sugar cane, and the roots of sugar beets. And originally, people chewed raw sugar cane to extract its sweetness. Sugar cane was then, we're talking about a thousand years ago, this was a native of tropical South Asia and Southeast Asia, and different species seemed to have originated from different locations in India and Africa as well.

And this just brings to mind a story, my wife she told me that she used to chew on sugar cane, my wife is from Kenya when she was a kid, and I'm just really, you chewed on something that had sugar in it? And this was early on when we first met, and I didn't understand, because I'm just like isn't it bad for your teeth? And this was actually well noted to be great for your teeth, and this was partially- ironically it's great for your teeth, because of the chewing work involved like the bones, your teeth are the only bones you can see, which is kind of weird, and just like your bones, they actually get stronger and more dense through exercise, so that's part of it, but also, we're looking at it contained a pretty rich amount of vitamins and minerals as well, vitamin a, c, b1, b2, b3, b5, b6, almost the whole b complex, along with a nice concentration of phytonutrients, antioxidants and also soluble fiber, also calcium, chromium, cobalt, magnesium, copper, potassium and zink.

Jade Harrell: Wow, it's a super food.

Shawn Stevenson: In a way, we can look at it like that. And so, this was something again that was noted to be kind of good for your teeth and this was something that people have been kind of chewing on for a long, long time. Now, the first chemically refined sugar appeared on the scene in India, about 2500 years ago, and there the Indians discovered a method of turning sugar cane juice into granulated crystals that were easier to store and transport. And in the local Indian language, these crystals were known as khaand, and this was a source of the word candy, that we now have today. And this special sugar was found in Europe by the first century ad, but primarily, as an imported medicine, okay, and not as a food. And so this was actually combined with not the best tasting medicines, herbs, things like that, and it kind of is that whole understanding of it, the Mary Poppins line, "just a spoonful of sugar helps the medicine goes down". And shut out to Mary Poppins.

Jade Harrell: In the most delightful way.

Shawn Stevenson: I didn't know I'd get that, I appreciate that. And so, basically it makes these other medicines more palatable, and so it was used as that originally. Now crusaders also brought home sugar with them to Europe after their campaigns in the holy land, and there they encountered caravans carrying what they referred to many times as "sweet salt" right, because of course they looked pretty similar. Now sugar was considered a luxury in Europe until about the 18 century when it became more widely available. And in fact, in 1319 a kilo of sugar also called another name was "white gold" went for two shillings a pound in London, and that's the equivalent of about 50 dollars a pound in current dollars, and this is what kept it a luxury item and most people when their entire lives unless they were in the richest classes, their entire lives without having this sugar. But by the 19th century, sugar became extremely popular and even considered a necessity in this evolution in taste, and demand for sugar as an essential food product unleashed a major, major economic and social change. Sugar was considered to be one of the major drivers of colonization of tropical islands and nations where labor intensive sugar cane plantations and sugar manufacturing could thrive. The demand for cheap labor to perform the hard work involved in cultivating and processing, increased the demand for the slave trade from Africa and in particular from West Africa, and slavery is often tied in our minds and I even ask my son about this, like what do you think about, what are the crops involved? And he said cotton, and also I would say tobacco would come to mind. But, sugar production was a huge driver of slavery as well, and in the 16th century, native people were enslaved by Europeans throughout the Caribbean islands, particularly Barbados and Jamaica and in Central and South America as well as labor to harvest sugar cane.

And with a native people being depleted by disease and harsh working conditions, African slaves were then brought in to take their place in the fields and processing operations. Now, hundreds of thousands of slaves died due to the conditions of the sugar cane fields, and a lot of people just don't know about this, and I know that I didn't when I began my research, I was really shocked by this. Because of this passing away, there was an extreme culture of mental and physical violence, brutal labor, lack of medical care, and a prevalence of infectious disease and malnutrition as well. And by 1807, and this is the time when Britain bans slave trading in this year, at least six million African slaves have been incarcerated on sugar cane plantations. Now, this is one of the roots of how it's so widespread in our kind of westernized world today, and it has this dark, dark, really horrific beginning, and I think it's important for

us to know that. But moving forward, so what we're looking at here in a summation is that millions of slaves, and as well as indentured laborers, were brought into the Americas and the Caribbean and as well as the Indian ocean colonies, Southeast Asia, Pacific islands and also East Africa as well.

And the modern ethnic mix of many nations that have settled in the past couple of centuries have been influenced by the demand for sugar. So in essence, it's this melting pot that has some sugar sprinkled in, that has helped to create this diversity, this ethnic mix, and if you see this like I see friends from Barbados, from Jamaica who look so different than you'd expect, the complexion of their skin, the appearance of their hair, those kinds of things are such a diverse mixture of people, and sugar was actually behind a lot of it.

So I wanted to just highlight this brief snapshot at this timeline and talk about the beginnings of like why are we even driven so much to strive to get something sweet, and also what it can do as far as manipulating our culture, and how far that this desire went in the enslavement of people and for this cultivation, and where we are now, so we're getting closer to that.

But I want to talk about this rise in consumption, but really quickly, let me give you a really brief understanding of how sugar is made. Now, sugar cane is grown and harvested obviously, so I'm just going to give you a quick run down, then it's washed, you've got to wash it, as my third grade teacher would say wash it, so you got to harvest, grow it, then we wash it, then it's crushed, and the cane juice is extracted from the fiber, and the cane juice is then put through a clarification process to remove the impurities. And from there, there's an evaporation process to remove the water, now the remaining syrup then goes through a crystallization process, now this is where it's evaporated until it's saturated with sugar, then this is an interesting part- small grains called seeds and these are just basically some grains of sugar added which then creates this growth, it's kind of like the nuclei for the formation of sugar crystals; so they take this syrup, this kind of saturated sugar and add these grains to it, and then it becomes granulated. Very interesting, these sugar crystals. Then it's put to centrifuge, dried, ran through multiple screenings to extract the uniform sugar that we generally see, and remove remaining byproducts. So that's just a brief breakdown of how the sugar is made, you know I could go in and we could break down for 20 minutes each section of that, but you get the picture, you know it ends up looking like cocaine, at the end of it.

So, let's jump back to the 1700s, this rise in consumption was starting to set the pace around this time, because at this point, an average person in Britain consumed about four pounds of sugar a year, and that amount will gradually increase as the price of sugar falls, due to the over production in the Americas.

And this makes it affordable for the middle class and the poor, and by 1870, the average resident of Britain now consumes 47 pounds of sugar a year, so we went from 4 to 47, right. And until around this time, sugar was produced in what were called loaves, which had to be cut using tools called sugar nips, and that's kind of like something that may be sort of a pet name you give your significant other, I don't know sugar nips, by thought it was interesting; and in later years, the granulated sugar was usually sold in bags, and sugar cubes were also produced by the 19th century. And in May of 1896, American sugar became one of the original twelve companies in the Dow Jones industrial average.

Jade Harrell: The original 12 that created the financial security system in this country. Wow.

Shawn Stevenson: Yes, it is absolutely crazy, it's something again I had no idea, you don't really think about the snp you know the Dow Jones, and being something related to sugar but that was one of the original twelve companies there. It was such an important part of our economics. Now, by 1900 sugar consumption in Britain more than doubles, and the average person now is eating about a hundred pounds of sugar annually. And the average American was consuming about 40 pounds of sugar annually. Today, the average US citizen eats about 150 pounds of added sugars each year, and this is including one of the industry favorites which is high fructose corn syrup, sky rocketing up from about 40 pounds just a little over a hundred years ago.

Now, are we better off as a society today? In many ways yes, we have this advanced technology, we have amazing tech and communications, and access, but in our health and natural function as a species, that's a big fat no for sure. So let's take a look at how sugar is deeply affecting our society in a number of ways.

And let's start with recreational drug use. In many waysm sugar was considered at a point to be somewhat of a recreational drug, and in many ways today it is even still used as a drug, and I'll give you some clues as to why this can be put in this category- it changes your physical state, it changes your mental and emotional state as well, and in the brain sugar stimulates the feel good chemical dopamine. So you can buy drugs to try to get that same response. Now sugar can even induce feelings of euphoria, right, or this "sugar high" we call it a sugar high, that's not an accident, we definitely have those similarities. Now sugar becomes glucose in your body, which is the basic building block of energy in your system, and so lots of it can make you feel incredibly energetic or even hyper.

Jade Harrell: I've seen that in children.

Shawn Stevenson: I've seen it in grown-ups.

Jade Harrell: For that matter, yeah.

Shawn Stevenson: But refined sugar will lead to a rollercoaster effect on your mood, so the withdrawals and you'll feel awesome, but then you crash, and go into lethargy and depression. And you can even get addicted to sugar as well, right, when we use that word addiction we're usually thinking about drugs, smoking, alcohol, but you can get just as, if not more addicted to sugar, and I'm going to tell you why. And of course, the horrible withdrawals from it. So researchers at Princeton university report that repeated sugar consumption will cause a demonstration of all three criteria of addiction: increased intake, withdrawal and cravings that lead to relapse. In fact, researchers are finding that sugar is more addictive than cocaine. Now a research compiled by scientists at the university of Bordeaux in France concluded that "overall researches revealed that sugar and sweet rewards cannot only be a substitute to addictive drugs like cocaine, but can even be more rewarding and attractive. At the neurological level, the neural substrates of sugar and sweet reward, appeared to be more robust than those of cocaine, i.e. more resistant to functional failures. Possibly reflecting past selective evolutionary pressures for seeking and taking foods high in sugar and calories."

Now this really sums it up a lot more right here, and this was a study published by the public Library of Science in which rats with no prior experience with refined sugar or artificial sweetener were allowed to choose eight times per day, between two mutually exclusive levers- one that gave them a dose of cocaine and one that gave them a dose of sugar water; and the results were mind blowing, most of them, and this is a stunning 94 percent of them became hooked on sugar or saccharin, and not cocaine. Another trials they found that even rats who were addicted to cocaine quickly switched their preference to sugar, once it was offered as a choice. And the rats were willing to do more work for sugar, than for cocaine.

Now, these researchers speculate that the sweet receptor, and there's two protein receptors located on tongue which evolved over ancestral times, when the diet was very low in sugar, this is key, they have not adapted to the high sugar consumption of modern times,

and so they are abnormally stimulated, over-stimulated these receptors, and generates this successive reward signal in the brain as a result, and this is kind of what's happening behind the scenes. And this generally leads to a potential override of normal self control mechanisms, and thus the potential for addiction is greatly increased.

Now in addition, the researchers found that there is also a cross tolerance, and I thought this was interesting, a cross tolerance and cross dependence between sugars and addictive drugs, and for an example, the animals with the long history of sugar consumption actually became desensitized to the effects of things like morphine, alright sugar actually desensitized them to those things, so it makes other drugs not as effective.

Jade Harrell: It makes morphine ineffective, that's mindblowing in and of itself. You go to morphine when stuff is off the chain, painful, crazy, bad, difficult, and it can desensitize morphine- yeah.

Shawn Stevenson: This a big highlight that sugar isn't just affecting your taste and your body fat, but this is a very powerful influence on your nervous system, your neurotransmitter function, your hormones, that drives you and compels you to consume it, but also, it numbs you to the rest of the world, it numbs you to other things. Crazy pants.

Now, let's shift over and talk a little bit about culture, in and of itself in regards to sugar. So, my question is how can you villainize sugar though, besides what you just learned, because of this? So my real question is how can you point out the problem with something that signifies love and significance in so many aspects of our lives; how can you villainize the cake that you give to your one year old on their very first birthday, and the love that's involved, how could you, we're talking about, this is something that it's what you give your lover on Valentine's Day.

Jade Harrell: You can't to villainize it, because it is so closely tied.

Shawn Stevenson: It signifies your love.

Jade Harrell: It does, so don't hate the sugar, hate the game.

Shawn Stevenson: It's what we give our kids after their game to celebrate, or to console, it's what we tie into celebrations on nearly every holiday, from Halloween to Christmas, to Valentine's Day, to Easter. And I still got little issue with the Easter one, because- that chocolate bunny?! So there's the two general kinds of eggs, the ones that are the hollow ones, a little easier do with, and then there's the ones that are solid, which are going to take you a solid amount of time to try to get through it, but you best believe, that I did my thing; and also of course the cadbury eggs, it takes a special kind of person to like that goo inside of the cadbury egg. Shout out to you, you know who you are. Some candy yolk, some candy egg white, it's so weird. And also the peeps, those marshmallow whatever, I was never really a fan of those.

Jade Harrell: It messed with my sense of human kindness to just pop them like that, it's a little chick, you shouldn't just be, you know.

Shawn Stevenson: Oh my goodness. And also, we have to be aware that there's a bunny out there that's laid an egg filled with candy somewhere, all right, I have no idea where that whole thing came from, but there's a bunny on a loose, laying eggs filled with candy, so keep an eye out. So how does that all tied- how can we possibly villainize that, it's so ingrained in our culture. And, I remember growing up, obviously when you're a child it's part and parcel of this childhood in our modernized world that candy is just a thing, like it's just a part of your daily goal, like I got to get the candy how am I going to do this, and I remember growing up, and we lived in a pretty tough neighborhood, but everywhere that we moved to, we moved like literally I think 13 times, yeah I know, crazy, right. Fun fact about Shawn- I came from this stable household until the age of about 6, 7, and then when I moved in with my mother, we moved around a lot, but there's always the corner store, right, the neighborhood corner store you go there, you get your deli meats, you get that kind of stuff, the bread, the milk and those kinds of things, but also you get your candy, and the Penny Candy, -one dollar one hundred pieces.

Jade Harrell: You become Richard Branson.

Shawn Stevenson: Right, I'm just in there like that, and so just thinking about the store owner, I'm picturing him right now, just how patient he was with these kids coming in and picking one hundred pieces, I'll take five of those, three of these, you know the sweetest fish, the sour cherries, you know, and just going around, and then you get a brown paper bag with these random loose, most of them were loose candies that you just eat for the next couple of days or sometimes just a day. And it's also those sharables, too, like that's a friend connector right there, you know, you're sharing your candy.

Jade Harrell: Well there is, it actually is kind of funny that you said that, because there was the whole system of trade and currency going on there, just like you described back with the stock exchange.

Shawn Stevenson: Exactly. Now, with these examples I want to really tie in just how much sugar is a part of our lives, our celebrations and our happy times. So we have to keep that in mind when we're talking about this substance, in the history we just covered look at where it stands today.

There's another big part of our social and happy times that sugar is involved in, and that's entertainment. So, when you think about going to the movies, right, for most people they are thinking about the opportunity to get the popcorn and the soda, right, and the soda isn't sugar free, right, and of course the candy that when I was a kid, and even recently, not too many years ago, I remember my wife's first date with me, because I just thought about this-

Jade Harrell: Sugar is bringing up your memories.

Shawn Stevenson: I remember gummy bears, I remember I had some gummy bears our first date to a movie, we went out before that, but our first day to the movie, and you know, I was trying to share those gummy bears with her, trying to share a little gummy bear. But also, just thinking about all like that display, right, and they've got the milk duds, they've got the twigs, they've got those random snow cats.

Jade Harrell: Whoppers.

Shawn Stevenson: The Whoppers, you go and bring up the whoppers,

Jade Harrell: You took me there, and why are these things so vivid, there is a deep connection there, I mean, it's almost as if we were there, and honestly there was a moment there I could smell the popcorn if the environment, it's just really that connected to all of that.

Shawn Stevenson: And we've talked about this, but you know our olfactory senses, our sense of smell is the most powerful connection in our memory, like it lasts the longest of all of our senses, and so that part of the brain is what we're looking at, and we've talked about this on past episodes with the various experts in brain health that we had on the show, Dr Daniel Amen, Jim Kwik, and understanding that we want to take advantage in a positive way that part of your brain, because smells are really tied to experiences, for us, for sure. And so keep that in mind, entertainment, like that's one of our big things in our culture, like going to the movies and it's tied in there deeply to that part of our lives.

So also endorsements, this is important when we're talking about entertainment, and there was a study from New York university that suggests that celebrities mostly plug food and drink products that are low in nutrients and high in sugar, in fact, for some of us is going to be the yes, no big surprise but have you ever really looked at that and paid attention to that? And also on the other side of that, there are no endorsements for fruits and vegetables in organic food, right, if you think about like what if Samuel L Jackson came on in a credit card commercial, he's like "eat some fruit and veggies". If we could get a shift in how we're doing things culturally, obviously because of these endorsements from celebrities, who we see endorsing things like you know Pepsi or McDonalds and things like that we've seen historically, or you can get maybe like Morpheus, right from the Matrix, and he's like talking to Neo- "for your mind Neo, what if I were to tell you that eating brussel sprouts would make you healthy"? Right, and then we jump on board with that, or Arno is like, "what are you doing eat that asparagus now". Or Kevin Hart is like, "okay kids listen, you got to eat your broccoli" and the kids are like, "no no I don't eat it", "just eat it, you got to be healthy!"

So, if we can get celebrities to endorse fruits and vegetables, it would change culture, but that's not what we see, because real talk this is just for being honest with ourselves- it will be hard to turn down a multi-million dollar contract, I'm sure. Pepsi's like you know what, I just need you to take a swig or say that this is good- ten million dollars, it would take a lot to turn that down, especially if you're not in the business of health, if you're not focused on that, and ironically Kevin Hart is somebody who is, he's actually tied in a lot of health and wellness messages to his platform, and I'm not going to say it's because a conversation we had, but I remember when he was here at the studio, we promote him right along to with Ice Cube, and I was like Kevin, why don't you talk more about this fitness thing, when you go on major media, right because they're out doing this promotion, and then the very next week he was on Conan and he started talking about his fitness challenges, and the things that he's doing different.

Jade Harrell: The Model Health influence is there clearly.

Shawn Stevenson: I receive that and big shot out for sure to Kevin Hart. Now Dr Marie Bragg a psychologist at New York university carried out a study with colleagues and he said "research has already shown that food advertising leads to over eating, and the food industry spends 1.8 billion dollars a year marketing to youth alone." So it's starting early on getting you hooked up.

Jade Harrell: To youth alone it's worth to invest that, so you see the consumption goes up they know it works, they'll to pay to play.

Shawn Stevenson: And if we can get a lifetime user, you know just we're talking about long term funds here, not just temporary, we get you later on in life or if we get you from the beginning and you are a constant consumer, that's money in the bank for these companies.

Jade Harrell: We just referred back to all our childhood memories, so wherever they got us then, it still resonates today.

Shawn Stevenson: Right, when you say Whoppers, malt chocolate covers, malt balls, I don't even know what a malt ball is, but sign me up.

Now, let's shift gears and talk about music, that's another big part of the entertainment in our culture, and of course there's a connection, there is lots of songs about sugar, right, there's sugar pie honey bunch I can't help myself, right that was the four tops, I can't help myself, you know that I love you; pour some sugar on me, and there's a newer one from Maroon 5, sugar, they just call it sugar, that's the jam, right.

Jade Harrell: That is the jam.

Shawn Stevenson: I don't know if you've ever peaked this before, but all of Maroon 5 songs are about breaking up. Except that one, let me not talk in extremes- most, they're upbeat breakup songs, all right. Just check it out next time you hear him Maroon 5, and I was just like sugar- and the video they're at the wedding, right, so they are actually going from the other extreme. Love is marriage, right, just speak that next time you check out a Maroon 5,

upbeat breakup songs. Now, there's of course pop culture, people like Mandy Moore, the Archies back in the day, Nina Simone has a song about sugar; The Rolling Stones, on and on, lots of sugar related songs, but outside of that aspect, concerts- concerts are huge venue for mass consumption of sugar, and in fact, 1.4 billion dollars was spent in 2014 alone on sponsorships with artists, venues and festivals, which has been steadily rising annually and with coca-cola being one of the largest investors. So getting that sugar permeated into that culture is huge, and I remember taking my wife to the Beyonce concert, right, when queen B was in town, shout the city down, but taking her to that and you know, it was kind of outside of my paradigm, not really in environments like that, and just seeing in the lines at the concession stand, they were crazy and I promise you people were not lined up to buy water; they weren't going to get that "can I get a courtesy cup of water". I remember when I first found out that was a thing, I was at one of my friends I think I was like eight years old, we went to this place, I have no money, and he got a water, I was like how did you get that, give me some money, and he was like no, just ask for a courtesy cup, right, so I asked and I was just shocked, I was like can I have a courtesy cup, I was waiting for them to be like get out of here, shoo. They gave me you a cup of water.

Jade Harrell: That was a pivotal moment, but think about that, if they all invest that much money, if that much money is available for a business to invest in pure marketing, how much then are they earning in revenue? And consumption. Your marketing budget isn't typically over, it definitely wouldn't be over half of your revenue, or any of your other expenses, so the sheer amount of consumption that that triggers.

Shawn Stevenson: That's just one aspect of their marketing, it's amazing. And then we move on from there in entertainment, sports- it's another big part of our entertainment in our culture; athletes themselves and candy, Dr Cate Shanahan who we had on the show, the author of "The Deep Nutrition", amazing, amazing book, we'll put that episode in the show notes as well; she works with the Los Angeles Lakers and she has been running their nutrition programs for many years, and I like to think she is responsible for Kobe's last game, dropping at 60 points, he was supposed to be at that point not capable of performing like that. But she was really governing a lot of those decisions, like with the team's food and one of the players that came in a couple of years ago was the Dwight Howard, and he is since long gone, but at the time she stumbled upon something, and because there's different aspects of what sugar can do to you, whether it's performance related, as far as lethargy if you're a player, you know getting that spike and then being very lethargic, and also if you are making your tissues out of snickers, chances are you going to have harder time recovering if you have an injury or increase your chances of getting injured. Like what are you actually making your tissues out of. And so she found out about the Dwight Howard, like this guy because she put him on this plan to really up level his nutrition, and he was like smuggling, he was hiding candy bars all over the house, he had helpers around the house, like hiding stashes for him, it was crazy, I mean he was consuming like something along the lines of like twelve candy bars a day, or something.

Jade Harrell: His body was crying out for it.

Shawn Stevenson: Yeah, crazy. And really quickly, since we're talking about candy bars, this is a big part of like when we talked about the movies, and we talked about going to

concerts, the athletics give you a brief history of the candy bar, so the candy bar had actually began back in 1847, and the first chocolate bar was made in Britain by Joseph Fry and his son who pressed the paste made of coco powder and sugar into a bar shape. Now, the chocolate bar was further developed in 1849, when John Cadbury, it might sound familiar, introduced his brand of a chocolate bar. And in 1875, Henry Nestle realized that adding milk to the chocolate mixture makes it less bitter. Another huge milestone in the world of chocolate, and now the first Hershey bar which is kind of the iconic bar here in the US was produced in 1900. And the candy bar geneology from there goes like this: Clark Bar 1916, Oh Henry 1920, Reese's Peanut Butter Cups 1922, Baby Routh and Milky Way 1923, Snickers hit the scene in 1933, Musketeers which was one of my jams, 1932, KitKat give me a break in 1933, and Nestle's Crunch in 1938. So celebrities have been particularly profitable for delivering our society sugar in the most efficient way to make you fat and sick, in the form of beverages. Promoting and being the the face of these different beverages. So we're looking at, I remember commercials for the various Gatorade, for example Gatorade, Powerade, and all the like in that sphere, juice itself, I remember like orange juice commercial that had athlete on it back in the day.

Jade Harrell: I thought you were talking about O'Jay and his, and then the one with mean Joe Green and he was like going onto the field and he turned back and shared his coke with him, it was like woow.

Shawn Stevenson: It was an iconic moment. Now, soda.

Jade Harrell: These iconic figures, so they create another association, you know, so we've got to connect it to our personal special times, we connect it to love, we connect it to fun and then we also connect it to those things we admire and aspire for, it would be really challenging to disconnect or deconstruct that very well woven relationship we have.

Shawn Stevenson: Exactly, I totally agree, a big part obviously is soda that we didn't mention and seeing all these icons, like you just mentioned Mean Jo Green, and so many people today who are the faces for these brands, and I just want to share this a twenty ounce bottle of coke since we mentioned coke, that's 65 grams of sugar.

Jade Harrell: What does that mean?

Shawn Stevenson: That's 13 teaspoons, that's like watch this- 1, 2, 3, 4, I'm just going to stop, that's a lot of teaspoons.

Jade Harrell: And like right there I was like-

Shawn Stevenson: Yeah, I wasn't even halfway there yet. So a twenty ounce in Mountain Dew, do the do, you know the commercials "extreme!"; 77 grams of sugar, that's about 15.5 teaspoons. So we can't talk about the beverages without talking about Kool-Aid.

Jade Harrell: Kool-Aid didn't come with sugar.

Shawn Stevenson: Right, it didn't come with sugar, but boy do we add it. You know who made the best sugar in the house-

Jade Harrell: Grandma?

Shawn Stevenson: Who put the most sugar?

Jade Harrell: You?

Shawn Stevenson: No, I'm not saying it was me, I was a flavor combiner, I was trying to do lemonade with the fruit punch, right, I was trying to combine, you got to get that sugar right, it's got to be just sweet enough that it hurts. So Sunny D was another thing, for me personally, my drink of choice, especially you know around my teen years was Hawaiian punch, that was my go to.

Jade Harrell: Even the dispensers now, there's not where you can go to the fountain and get the drinks, you have to, you can use a digital screen because there's so many ways they can deliver this sugar to you now, so where you might have had a choice of six, just in one machine that there's 20 to 25 various options that you have to key in.

Shawn Stevenson: That reminds me of when I was, I was probably around nine years old and I would go to the store, go to 7-eleven for my mom, pretty much daily, for her double gulp, not the big gulp, but the super big gulp, they came with the double gulp, I think it became illegal, right, but I literally had to go in there, you got to put the carton together like it gives you like this flat thing you put the carton together and I go and get her this Pepsi like every day. And, seeing my mother, looking back on it, and I was just in a very, this was an environment that was having poor health, it was contagious in a way you know, it's just all that we knew, you know and seeing her carrying so much weight on her frame, and seeing the illnesses that resulted from that, was just you know, for me to look back and see that just like what were we doing, it was so unconscious, but at some point we have to take responsibility, we've got to wake up and realize that these things are going on, these things are controlling us, this isn't just like for the nostalgia, I'm going to get a coke; but, do you have an issue, right, is this something that's a consistent part of your life, because if it is chances are this is killing you. This is causing all of these health problems that we're going to talk to in just a moment. But, I want to also mention the fact that a lot of sugars and tea drinks these different tea beverages, have just as much if not more sugar than soda, so please be aware, please be aware.

Now- coffee. Coffee's another big one, biggest commodity, now the question is- when people are getting coffee- are you getting coffee? That's not the case, nine times out of ten, the question is would you like some coffee with your sugar? Would you like some coffee with that sugar? Right? It's the sweet first, that's what you think you like coffee, but you don't really like that bitter, you want that sweetness. And so, smoothies, ice coffee, recently the internet was going nuts over this unicorn frappuccino, and so just to give you a comparison 59 grams of sugar there, and that's about twelve teaspoons of sugar for their 16 ounce grande size, you are not going to get the baby size, anyway.

Jade Harrell: So practically a teaspoon per ounce of drink, for every ounce.

Shawn Stevenson: Congratulations.

Jade Harrell: What's the point in liquifying.

Shawn Stevenson: That is the thing, that's not even Starbucks most sugar filled drink. Their basic cafe vanilla frappuccino, has 69 grams of sugar in the grande size, that's 14 teaspoons, and again comparison 16 ounce slurpy, from 7-eleven has about 36 grams of sugar, and a 20 ounce bottle of coke has 65 grams, so it's more than that.

Jade Harrell: And you pay a lot more for it too. But you're willing to, it takes it back to that whole it's exclusive.

Shawn Stevenson: Like you're willing to see. So I really wanted to highlight that in how sugar is so tied into a culture via entertainment, via celebrity endorsements, and so that we can start to see it when it presents itself now, because for a lot of us it's just kind of in the back burner, we don't really pay attention to it, or we don't think anything of it as far as like some it's cool, like they got that deal, they got that coke deal, they got that Pepsi deal, they got the Gatorade deal.

Jade Harrell: It is only 50 cents you can get this for 35 cents, it's so inexpensive it's cheaper to get, you often here when it comes to the things that are laid in with sugar, you know, you can as a matter of fact, you could pay more for an apple than you could for these stuff.

Shawn Stevenson: Definitely. Have you seen the price of avocado? I mean, you know it's because of the government subsidies and just the leverage that these companies have, I mean they're controlling so many systems that you are, you're probably not paying attention to.

I want to shift gears now, and talk about something that again, this is often overlooked by the relationship between sugar and sex. Now there's, of course we should mention the song "pour some sugar on me", right, it just reminded me, salt and pepper, "chocolate chip honey dip can I get a scoop", right, now real talk- what's the connection here with sexual function? A recent study published in the journal of clinical investigation found that eating too much fructose and glucose can turn off the gene that regulates the levels of active testosterone and estrogen in your body; the production of excess fat forces your liver to turn off sex hormone binding globulin. And this is a gene that produces a protein that estrogen and testosterone need in order to function, so we're literally turning these things off, and making it harder for you to be healthy. I was trying to finesse that one, and so we have to pay more attention to this, because we're looking at a situation today where erectile dysfunction is just an epidemic, where fertility issues are just at all time highs, and we just did a recent episode focusing on natural treatments for fertility, and just how to radically increase your fertility, even if you're not trying to have a baby, that fertility is tied to just vitality, life, right so you want to be a fertile human being, and you can transmit that into other areas of your life, not just having babies, but shout out to having babies.

All right, so now, in a study published in the clinical endocrinology, we had 74 men of varying ages undergoing an oral glucose tolerance test, and researchers found that sugar induces a significant reduction in total and free testosterone levels; so just consuming directly these sugar treatments, dropped their testosterone down, right there in black and white. And if we look at an issue, and there are so many issues we could target here, but vaginal dryness for example, women with disregulated blood sugar actually have a 33 percent increase incidence of vaginal dryness, this is something that's often seen with conditions like diabetes and insulin resistance. So these are obviously components that are related to sexual health.

Now, reproductive health specifically, deactivation of the sex hormone binding globulin gene is obviously a problem for fertility too, and again so that episode is 190 by the way, which we'll put in the show notes and that was how to radically enhance reproductive power. And then we look at what are some of the underlying things related to sugar and reproduction, pcos- polycystic ovarian syndrome, is the primary cause of female infertility today, and Geraline Prior md puts it like this, "insulin stimulates androgen receptors on the outside of the ovary, causing the typical pcos symptoms of excess hair, and this is on the face arms and legs, thin hair on the head and acne. Eventually, this type of diet that's high in sugar will cause obesity, which will cause insulin resistance, which is the inability of the cells to take in insulin, which will aggravate the pcos symptoms even more. And the androgens also play a role in blocking the release of the egg from the follicle." Now, obviously we have this deep connection with sugar that's just been on a parallel track though, with a rising rates of obesity, of infertility, of insulin resistance, of diabetes, of erectile dysfunction, and all of these conditions are linked to sugar consumption. Fascinating. Now it's again, we're not going to say it's the cause, but this correlation with so many different things we need to pay more attention to.

Now, I want to touch on sugar and violence, sugar and its relationship to violence. And obviously, we'd mentioned earlier the connection in history with slavery and how sugar played a role in that, but what are other ways that sugar has been capable of inciting violence? Now, common symptoms of hypoglycemia, so this is when we get a sugar spike and then we crash, common symptoms of hypoglycemia include weakness, hunger, confusion, irritability, behavioral changes such as aggression, excitement, and violence; sensory changes, such as blurred vision, and something today we have this new term called hangry, right, hungry and angry.

Jade Harrell: My grandson, I got a grandson and he is two, and we were celebrating Easter and so he had found the eggs and the candy and all the treats, and he was just going and consuming them and playing, consuming and playing, consuming and playing, and then he came into the kitchen and he just looked really sleepy, and kind of staggering, and in the next moment, he started pounding on my mother in law's leg, because she told him, here give me that you need to eat dinner, and he just started treating her thigh, and she says what, I've never seen him act that way, and I said well I don't know if he's ever consumed that much sugar, but it just was like, it was a violent and aggressive response, and he seemed like he was not connected to that action at all, it was really frightening to me, and I noticed it, even to recall it now that it was just so shocking.

Shawn Stevenson: That's a great example, I mean, and again because it's such a part of our culture, sugar really does influence our mental function, significantly. And I want to share why, like what's one of the underlying mechanisms. Well, the body reacts to low blood glucose, when we get that spike in the crash, by the production it reacts with this production of these counter regulatory hormones like adrenaline, and these hormones are the fight or flight hormones, he was fighting. And that's what the body releases, when there is a perceived danger, all right, so what are you going to do- you're going to have a greater propensity toward violence, if your physiology is feeling threatened. Now a neuroscientist Matthew Botvinnik sees lack of glucose as just one reason among many that we become unglued, what he calls unglued. He says that we should think of hunger not as a lack of fuel, but as an unpleasant state i.e. the grandkid, he's in an unpleasant state. No different from other such states, like having a headache, doing a tedious chore, having to stay late at work, other things that you don't like to do, experiences that tax us, and thus make us less willing to devote energy to regulating our moods and responses.

Jade Harrell: Spend less energy in regulating our mood or responses. So even exercising some sort of control or moderation, wow.

Shawn Stevenson: Now, check this out- so this was a study that was done by Ohio state university, and this one is pretty bananas, they were aware that their multiple studies suggesting that low blood sugar from this crash going hypoglycemic is an underlying cause of hunger induced crankiness, and so they sought to find out just how much like, what can go wrong here, what is, what's going on behind the scenes. And so they recruited 107 couples for the study, and they assess the quality of their relationships, and taught them how to measure their blood sugar, and then, this is the crazy part, they gave each of the volunteers in the couple a voodoo doll with 51 pins and they told the participants that this doll represents their spouse, and that every night before they went to bed, they should stab the doll with pins depending on how angry they are with their spouse. Now, so the more pins they put in the doll, the angrier they were. After three weeks, this is crazy, the team assessed the damage that was done to each dolls, and volunteers who had low blood levels below normal, from going hypoglycemic, stuck more pins into the voodoo dolls than those who had normal levels of blood glucose. And his team reported this, this was in the proceedings of the national academy of sciences, and so even in that context of your most intimate relationships, there's going to be a tendency towards an attitude change, and this is a weird kind of violence, like you are stabbing a voodoo doll with some pins, it's kind of weird but a really interesting assessment there.

Jade Harrell: So that makes me want to go back to your movie date with the gummy bears, so later on that day, everything worked out.

Shawn Stevenson: I was eating pretty healthy bear too, I am not interested in gummy bears today. But I was pretty good then.

Jade Harrell: Yeah, the things work out with your relationship that evening, after having gummy bears.

Shawn Stevenson: Now, researchers from Cardiff university in the UK found that higher rates of sugar consumption as children, can lead to higher rates of violence as adults. What they discovered was that this was related to functions of difficulty and delayed gratification, because sugar is so strong and addictive, also a higher propensity towards impulsiveness and this doesn't account for all the factors that they found in the study, but it's definitely an interesting one to take notice of, and so this is what they did; they studied seven thousand people born in 1970, who were part of this British cohort study, and they found that by age 34, 38 of the participants, 90 percent of the male had committed at least one violent offense, and other participants whose data was analyzed, 69 percent of them ate "confectionery" which covers candy, anything sugary, daily, during childhood; whereas 42 percent of the non violent people indulged daily, right so just to understand, there's again this is a unique correlation, so we're not taking into account other factors, but we're looking at 27 percent increase in probability of a violent offense, when you consume candy on a regular basis, or "confectionery", that's really fascinating stuff.

Now, one more subject I want to touch on before we get to the health implications, and kind of wrap this up is the big business of sugar itself. So this is, understanding if we look back again at history, it was very very expensive in the beginning and a teaspoon of sugar in the 16th century costed the equivalent of five dollars in London. And again, how much sugar do we consume today? It's changed so much because it's so cheap. The average person and this is in the industrialized countries, and this is across the board industrialized countries, 53 pounds of sugar each year, and again, 150 pounds of added sugars a year, here in the US, per person. And I came across this ad back in the day, this was actually a magazine ad promoting the use of sugar, so this is like around the 1940s and 1950s, and it says the big headline is "Sugar's quick energy can be the will power you need to eat less", this was legal to market that, and today we see the global sugar-sweetener market is projected to reach almost 100 billion dollars this year, according to bcc research. CNH, here's quick shot out because this is the sugar that I remember most frequently, CNH that's the California and Hawaiian sugar company, it was founded in 1906, produces about 640 thousand tons of sugar per year that is processed, and the American Sugar Refinery company, and this was actually the company on the Dow Jones, it was the parent company of Domino Sugar, which is established in 1900, and in 1916 Domino introduced individually wrapped sugar tablets by the way, so they were actually in tablet form instead of the granulated, kind of like little packets of butter in a way, and this is a big big business, we have to keep this in mind, so I just gave you a quick little brief history of the major sugar companies, but we have to keep in mind 100 billion dollars. All right, 100 billion dollars. And how would these companies feel if people start consuming less sugar? That's going to cut into their bottom line, so guess what- they're going to find every way they can to manipulate and to get sugar into products, and get them into your body, and so we have to be aware that some things get worse before they get better, so we need to be aware as you start to pull back and become more aware, that these companies are fighting very hard to keep building their bottom line.

Now diseases that are linked to sugar consumption, we need to discuss this. The first one that generally comes in mind is diabetes- the sugar. I remember some adults when I was a kid calling it the sugar, I've got the sugar. So how does this work, well, essentially and this is again we've done entire episode dedicated to breaking down reverse engineering this illness and we'll put that in the show notes.

Jade Harrell: That's the diabetes episode, correct?

Shawn Stevenson: Yeah, right the diabetes episode, and we did another episode as well detailing some natural solutions for this, and so we'll put that in the show notes. And so this is the hundred foot view of how this is functioning in our body, basically your beta cells in your pancreas are producing insulin and this is in response to glucose showing up in your blood. So glucose is this form of energy currency in the body, but it cannot sit around and be prevalent in your blood stream, because it's dangerous, it can start to break things apart, if it's too prevalent in your blood, so insulin comes along to grab that molecule and move it into your cells. Now, diabetes comes about when there is an insulin resistance, so much sugar and we're talking about type two diabetes, this is adult onset diabetes which is no longer exclusively for adults by the way, this is a situation where there's so much sugar exposure in the body, that with all of the glucose that's in the blood, the cells begin to become resistant to allowing that much sugar to be put into your cells. And so insulin itself starts to be like my job is too hard, you've got so much sugar coming in here, you're working me to the bone, I'm not coming in today, all right, no call no show. And so that's a hundred foot view, there is again, we broke it down in depth, and I think I have given analogy of insulin being like the club bouncing, right, so definitely check out that episode if you want to get more details on how that illness works, but the bottom line is this- diabetes is a very, very dangerous illness, is tied to many other illnesses; with diabetes, people often pass away or put themselves in a very, very tough state from other illnesses, so this is another catalyst for heart disease, heart attacks, cancer, amputation right, losing vision, so many different things spring from this insulin resistance and diabetes. So I want you to be aware of that. And the cause- is processed foods, sugar, that's really behind the scenes what's causing a lot of the issues related to type two diabetes.

Now we move on to the second most connected thing mentally for us when it comes to sugar is obesity. And glucose and fructose are metabolized in the liver, that's important to understand, but fructose is 100 percent metabolized by the liver which we'll talk about in just a moment, but when there's too much sugar in the diet the liver converts it into a lipid, you know, it's a process called lipogenesis, your liver is trying to protect you, and not allow all of that to be in circulation in your body, so it converts it into lipids and this is how basically a slice of cake ends up as body fat, right. Your body isn't just, it's not just fat in and out of itself it's a process of conversion that happens via your liver who is handling this sugar. So, we have to take care of our liver and we did an entire episode dedicated to that too. I'll put that in the show notes. Love your liver powerful fat burning is like it's heavily related to fat burning processes in your body which you'll learn about in that episode. So this increase in lipids is what shuts down that gene that we talked about, that regulates the level of sex hormones. See the connection? So, excess sugar can create leptin resistance as well, and so leptin is your body's satiety hormone, and basically your fat cells are still producing leptin, we have to keep that in mind, but your leptin receptors down regulate because they are too bombarded, and there's one study in the journal clinical endocrinology that looked at three groups of men and found that those with higher leptin levels most likely due to leptin resistance, they also had significantly higher body mass index and lower levels of testosterone. So we can do a whole show just talking about sugar and obesity in and of itself, but just please understand this is the contributing factor, it's not farm raised eggs, this is sugar, right, it's not fruits and

vegetables that we talked about earlier, let me be clear- natural lower sugar fruits not genetically modified bananas, if you go on bananas, on bananas that can show up again because your body doesn't really care what type of sugar it is, it is going to end up as glucose in your blood or fructose in your liver. Your body has to do work massive processes to keep you safe and if that means turning that into fat and storing it on your on your butt, or on your belly.

Alright, now, so I just want people to recognize that, to really look at that, that this obesity epidemic when we're talking about obesity, when we're talking about diabetes, these two conditions, the driving force here is our society's obsession with sugar. Now, we can talk about heart disease really quickly, consuming excess, when we talk about the process with the liver the lipogenesis, it also creates higher rates of these triglycerides and also low density lipoprotein molecules as well, these are the more dangerous forms of cholesterol and this is generated from over consumption of carbohydrate, not from eating cholesterol, alright, which is important nutrient actually for building your sex hormones, you need cholesterol, but the "bad kind of cholesterol" very low density lipoprotein molecules is a result of over consumption of carbohydrates. So this connections to cancer, alzheimer's and dementia, macular degeneration, sleep disturbances, bone degeneration, skin disorders, chronic fatigue, dental issues, obviously that's another thing people recognize, arthritis, inflammation and gut dysbiosis. And so this is just some of the list that you just have to be aware today to recognize the history of sugar has led us to this point, and it's not a normal thing, this is something we did not evolve with, and we can mutate but you have to be aware evolution takes time. Tens of thousands, hundreds of thousands of years, and I don't think you got that kind of time, we maybe get hit the x man button, I don't know if sugar is going to be the trigger here, are you going to be an n human or whatever, maybe you shoot out sugar and people- sugar man. Sugar man is sweet, so that's probably not going to happen.

Now, what alternatives do we have? Well, one of the big ones today is, and there's some positive here there's some not so positive, high fructose corn syrup I want to talk about really quickly; your body metabolizes fructose in a much different way than glucose, and fructose is broken down specifically by your liver, just like alcohol, and produces many of the same side effects of alcohol, right down to the "beer belly". Prison researchers found that high fructose corn syrup prompts considerably more weight gain than table sugar, please be aware. Ans high fructose corn syrup is also linked to high rates of diabetes and heart disease included. And high fructose corn syrup many people are aware of this today, but I remember that again they had their last ditch effort, they had a commercial where there were people sitting there like at a picnic and they're like eating popsicles and one mom was like why don't you eat that and give it to your kid, oh it has a high fructose corn syrup, and then the person responds like, so what's wrong with that, and the person is like well, I don't know. And then it cuts to the music it's just like it's so ignorant, so ignorant and that would, if you were in zombie mode just going to be like off course, yeah. But if you're aware and you can look at some of the data, just a little bit of the data, you know what the problem is. Now there were two studies that were done using med students, and both were looking at the biological responses to fructose, and in the first study the students were given either a large glucose load or a large fructose load, and the students given fructose almost 30 percent of the calories ended up as fat, and in the students giving glucose almost none ended up as fat. Now again 20 percent of the glucose is metabolized by the liver, but this is related to the fact that nearly every cell in

your body can directly use glucose as a fuel source, so it's kind of burned up immediately in a way, it depends on how much you take, it depends on how much you take in, so we got to be clear on that. So fructose is very dangerous in its response because that accumulation of extra fat, it can definitely be a problem because that fat begins to function as another endocrine organ that's not doing friendly things for you.

Maybe a more positive upgrade, we can look at substance like Stevia, you know this is very popular and there are some potential issues with Stevia, just like any of this stuff, but we want to look at what's the root of it, the best form of that is going to be the whole leaf itself, right, which it has like it's a sweet, very sweet leaf, but it has this weird kind of medicinal aftertaste you know, so it depends on how you use it, but then we get all the way to the concentrated version that looks like sugar and maybe that's not cool, because it's so far removed from where it came from. Now still you can use so much less of this, this why am a big fan of it, you can use a whole leaf or use and I like the little drops, like the Stevia drops you could use like three and its sweetened great, right, it's just a small amount as compared to you know two or three teaspoons of sugar, you'd want to get that same kind of vibe. Another choice that is becoming very popular today is a monk fruit or a luohanguo. And the monk fruit has been used for centuries in traditional Chinese medicine, but only recently the fda approved it for use as a sweetener that was in 2010, a monk fruit contains natural sugars like fructose and glucose, but in smaller amounts and it's actually not sweet because of those, this is what's so different about this than other foods; monk fruit extract actually gets its intense sweetness from a unique antioxidant, called mogrosin. Mogrosin, so it's actually getting its sweetness from an antioxidant which is pretty interesting. And obviously, there's honey which is more considered as a whole food in a way, so you want to get if you are using honey, that's not pasteurized, it's just raw honey preferably local honey, and you can look at some research showing that there's some positive benefits for things like allergies, there's obviously big tradition with treating burns and things like that but, there's an abundance of minerals, trace minerals, it's enzymatically active, antioxidant rich, but you want to use this in small amounts as well, because again it's a pretty strong sweetener.

Agave, I have to mention this one, this is very important for this history lesson. It's considered to be a "natural sweetener", but something that's high in fructose can naturally kill you, and blue agave it's an exotic plant that's growing in rich volcanic soil of Mexico under the hot tropical sun, boasting a stately flower that blooms only once in his lifetime. It's romantic right, so we're setting it up and if you ferment it, it becomes Mexico's favorite adult beverage and also couple of my uncles- Tekila.

Jade Harrell: I like it already.

Shawn Stevenson: Here is the issue- fructose does, and this is why it was so promoted, and I was one of those people, I went with it. It doesn't raise blood sugar in the same way the sugar does, it's negligible; or insulin, in the short term, but when consumed in high amounts it leads to insulin resistance, and a long term effects of chronically elevated blood sugar and insulin levels, you'll see those flooding with long term use. Now, depending on the source and processing method, agave syrup can contain as little as and this is very rare that you'll see this as little as 55 percent fructose, that's the same amount found in high fructose corn syrup. Now most agave syrup-

Jade Harrell: Why do we call that a little?

Shawn Stevenson: That's the small amount, I said as little. Most agave products, syrups have higher fructose content than any commercial sweetener ranging up to 97 percent fructose, far more fructose than high fructose corn syrup, it's called high fructose corn syrup because it's high fructose. Personally when I began using it early on, you know trusted adviser said you know this is a new great thing, it doesn't raise but I didn't look at the research, and so when I would use it, I would even use it in classes, every single time I get a headache, every time, but I was just like push it off as something else, like it must be this, I must be stressed or whatever, I give it some other reason; but whenever I didn't have the agave I didn't have a headache. And this is reported by Dr Ingrid Kohlstadt, and this is a fellow of the American college of nutrition, an associate faculty member at John Hopkins school of public health says that, "agave is almost all fructose, a highly processed sugar with great marketing". So just be aware, I know that this might push some buttons for you, like you know agave has been great for me, regardless if it's something you were using. your using less and you are doing all these other great things with your food choices, you're probably going to get a lot healthier, it's still an option, but I wouldn't advocate the use of it, you just need to be much, much more aware.

There's raw sugar, Turbinado, and this is a less processed form of sugar, but please understand it's still sugar, and it's still a very high concentrated source of all the things that we've talked about earlier. So these are some various options when we're looking at alternatives to sugar, but there's a better way. Even outside of the things we're trying to substitute, even fruits you know that's a great substitute as well, is we're making smoothies and things like that, you don't got to go and pour like the frappuccino that we talked about earlier, all that sugar into the beverage you can utilize some fruits that have fiber, that have these sweet notes as well, and all of the vitamins and minerals you know, more real food based things, but the real question is where we are in our history, how do we break up with sugar? Sugar, you've been there for me, we've grown together, but I think we need to see other people, I think we've grown apart.

Jade Harrell: You are way too good at that.

Shawn Stevenson: No, no, you know we had our time, and at this point there's a lot of negative repercussions that are happening in my life and I want to be free; so how do we break up with sugar? How we do that? Number one, awareness is the first step, awareness trumps everything and today's show is important in that and note to yourself the foods that tend to have a little bit more seductive grasp on you, become aware of these things, these sugar laden foods that tend to have that control over you, so awareness trumps everything and that's what today's show is all about. Another key here is to reset your palette; real food with the use of wonderful culinary spices can fulfill the deepest desires for taste sensations, variety and overall pleasure from food. I definitely had my palette set to sugar on 100, like all the time, and today I can find sweetness in even bitter foods, you know because of my palette has changed and evolved and I guess it's just more normal at this point. And with that said, you can actually enjoy like I'm so much more appreciative of food because I can taste

all these different sensations, and I'm not just getting hammered by this sweet experience that makes other things just not as fulfilling.

Jade Harrell: Like you said, it numbs the other sensations.

Shawn Stevenson: So what we want to do is we want to put some respect on your flavor receptors; so our gustatory system, so we want to look at sweet, right, sweet, salty, sour, bitter- these are all flavor sensations that we want to consciously incorporate in our lives, on a frequent basis, if not daily. And another one is the umami, or savory, right this is becoming some that's being more considered part of this gustatory system and people that tastes umami through taste receptors specifically, glutamate and glutamate is widely present in savory foods, such as meat, broths, fermented products and the issue that food manufacturers take advantage of this sensation, and you heard glutamate, you might have heard of something called monosodium glutamate in their products, so to get you instead of the sweet, or we hit you with the sweet and that forget about it, right, and so these are msg is known as excitotoxin or something that stimulates your cells, your brain cells to the point that they actually die, causing headaches, insomnia, obesity, depression, there's studies linking all of that, and you just go to dr. Google you can look that up.

Now, foods that are rich in this flavor sensation are notably fish, shellfish, mushrooms, veggies, and things like that and in humans, we first encounter the umami component in breast milk, and it contains roughly the same amount of umami as broth. And as a bonus, spicy, that's another it's not really considered to be something that is a flavor, but more of an experience, but I consider it as a flavor all right, so you want to enjoy that like imbude these different flavor sensations and experiences into your pallet, try to do them on a daily basis. Also cool is one other one that we often don't think about, like that minty experience as well, so another key here is to upgrade the ingredients of your sweets, this is something we're big proponents of, we're definitely not the anti fun people, you know and I think that's what's most healing is being able to enjoy your food and enjoy the process of getting well and living this life like we have to eat, we might as well like it, you know.

And so upgrading ingredients of your sweet and so what that would look like is our good friend Michael Morelli, he does the carb cycling in the sweet potato diet., he was on recently talking about that, and he mentioned the fact that he has this sweet potato brownies recipe in his book and the sweet potato muffins which I just had yesterday, shout out to Michael Morelli, we'll put that episode in the show notes for you as well, but we're upgrading the ingredients, right instead of using this terrible, enriched, bleached flour, you know maybe using coconut flour, right or even you can go with a gluten free option but understand that's going to be something that is toward [01:23:57 indiscernible] as well but higher quality options and we look at the sweetness from sweet potato, right maybe there's a little added honey in the mix or something like that, but more real food base more whole ingredients going into your favorite indulgences.

Another example is protein pancakes, I am a big fan of these, so we'll use the hemp force protein from Onnit in the mix, and ground flax seed, you can use some gluten free mix or make your own from like lower glycemic blends like coconut flower almond, things like that; the eggs unsweetened almond milk as well, and whip up some pretty tasty pancakes too.

And lastly, you want to ensure that your body is not deficient, that sweet desire it's a driver for more calories to fulfill needs, just to fulfill temporary energy needs for survival, but if you are rich within yourself as far as the nutrients, the vitamins, the minerals the amino acids all of these amazing compounds, you are going to be far less likely to fall off the wagon so to speak, and go crazy on some doughnuts and some soda, and you know these sugary things, this unicorn frappuccino. A really sovereign healthy person is probably not going to be attracted to that. But, sometimes again, there are ways to enjoy some of these things, but we just want to be in control to make the choice and not it controlling us, so that i make sure you're getting your greens and this is very important.

And for us, we use the green, you saw my bottle here, yes the green super food blend from Organifi, and so Organifi has spirulina, moringa, chlorella; spirulina- 71 percent protein by weight, all right powerhouse source of protein gram for gram, the number one protein food in the world, plus phycocyanin for stem cell genesis, literally creating new stem cells; chlorella growth factors in there are powerful for eliminating heavy metals from your body. The moringa one of the most nutrient dense foods in the world, plus it has ashwaganda, coconut water is a little mint in there, so it's using these different taste sensations to make this taste good, and that's the key, it actually tastes good when you have company x green powder, so many green powders are out there and I have tried so many, oh my goodness, if you only knew. This one actually tastes amazing and you can drink it straight, my kids actually we drink it straight or you add it to your smoothies, things like that. So make sure that you are using a green super food bend like the one from Organifi, so head over to organifi.com/model and you're going to get 20 percent of the organifi green juice and all of their other amazing products as well, and I've got to get Jade of my fancy Organifi glass bottles.

The last thing I want to share with you is the mental component here, the emotional connection, you know the deeper meaning of sweetness. So are we in fact looking for more sweetness externally because we're lacking sweetness in our life, in a way? And this is something that we strive towards, you know, when life is sweet, we want to find that in other places outside of just food; again, food is an important factor, but what about our relationships, but what about our exercise, what about our getting out and enjoying life, and this amazing body that we have, and exploring, right this vast amazing world. If you'd explore every day of your life, you would not be able to explore even 5 percent of this planet, you know, so there is so much for us to do, and to make life far more sweeter, so that we're not so driven to grab sweetness from a piece of candy.

Jade Harrell: That's sweet satisfaction.

Shawn Stevenson: Now we have to understand that food and sugar does have a very strong emotional connection for us, and we talked about that today and how it relates to our most prized events and our most exciting holidays in our society, you know, grandma right, even her kisses I remember my great grandmother, she would be like give me some sugar, you know, and so this is tied to those feelings of love and warmth and inclusiveness, and something that it can get to a point where it gets twisted though, because if we've moved away from those situations and now we're isolated, now we're working ourselves, you know right into an early grave, and we are stressed out, and we are not connecting with our loved ones- we are going to have that psychological connection to love and sugar, right it's there,

it's tied in there. When I felt loved, when I felt connected, I was getting the intimates from my grandma.

Jade Harrell: Sure and then when you don't feel loved, and you don't feel connected, you'll grab the sugar to fill the intimates.

Shawn Stevenson: That was actually only for the guests, when the guests come over, we couldn't need it just because.

Jade Harrell: Believe me, when I got off on my own and I was in college and I had those feelings of absence and loneliness or missing I'd go the store and I'd get the box and it would be me by myself.

Shawn Stevenson: Exactly, carrying that same behavior pattern. Shout out to freshman fifteen.

Jade Harrell: Yeah.

Shawn Stevenson: So please understand we've got to acknowledge that aspect as well. So today's episode and really walking you through the history of sugar is about this empowerment, is about this waking up process and seeing how this substance is deeply engrained into our culture and at the same time, there is plenty of happy times and potential benefit there in some instances, but the downside is tremendous, when things have gotten out of hand to the degree that they have today and today is about taking control and waking up to this process, being aware of how this whole thing started, where we are today and where we are moving towards in the future. And, if you've got a lot of value out of this episode, please make sure to share this with your friends and family, on social media, on twitter, facebook, instagram, everywhere that you can get the word out and share, give that gift of empowerment and awareness, and it's such an important time because today, more than any other time in history we have the ability to share this, with our loved ones and for all of us to collectively make a stand and to take back control of our health.

I appreciate you so much, have an amazing day, and I'll talk with you soon. And make sure for more after the show you head over to themodelhealthshow.com that is where you can find the show notes, and if you've got any questions or comments, make sure to let me know, and please head over to iTunes and give us a 5 star rating, and let everybody know that our show is awesome, and you're loving it, and I read all the comments, so please leave me a comment there and take care everybody, I promise to keep giving you more powerful empowering great content to help transform your life, thanks for tuning in.