Almost Everyone Eats it, But it's a "Breeding Ground" for Disease
By Dr. Mercola, fév 2012 -

http://articles.mercola.com/sites/articles/archive/2012/02/27/can-sugar-be-toxic.aspx

Evidence is mounting that sugar is the primary factor causing not just obesity, but also many chronic and lethal diseases.

Dr. Robert Lustig, one of the leading experts on childhood obesity, and arguably the number one enemy of the sugar lobby, has published a well written article in the prestigious scientific journal *Nature* arguing that sugar is a poison.[i]

He believes that the negative health effects of sugar consumption can no longer be ignored, any more than the health effects of tobacco and alcohol could.

According to Dr. Lustig, via the website Diet Doctor[ii]:

"The problem with sugar isn't just weight gain ... A growing body of scientific evidence is showing that fructose can trigger processes that lead to liver toxicity and a host of other chronic diseases.

A little is not a problem, but a lot kills -- slowly."

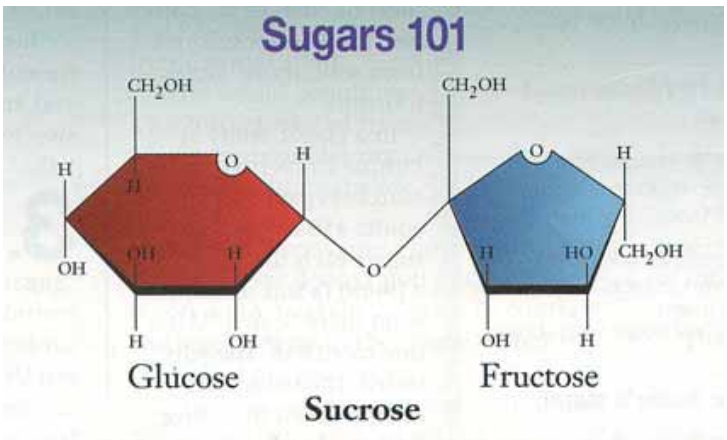
For the first time in history, "lifestyle" diseases -- diabetes, heart disease, and some cancers -- are killing more people than communicable diseases. And treating these *entirely preventable* illnesses costs more than one-seventh of the U.S. GDP. It stands to reason then that simply *preventing* these diseases could save the US health care system around *one trillion dollars a year*.

One of the primary, and likely most effective ways of preventing these diseases would be to curb the outrageous over-consumption of sugar.

Dr. Lustig rightfully argues that sugar used to be available to our ancestors only as fruit or honey—and then only for a few months of the year—compared to today, when sugar (primarily in the form of high fructose corn syrup) is added to virtually all processed foods and drinks; even items you normally would not think of as being high in sugar. Tragically, many infant formulas even contain more than 50 percent sugar! *"Nature made sugar hard to get; man made it easy,"* Dr. Lustig says.

Fructose is NOT the Same as Glucose

Glucose is the form of energy you were designed to run on. Every cell in your body, every bacterium -- and in fact, every living thing on the Earth -- uses glucose for energy.



Sucrose (table sugar) is broken down—in the body and (to some extent) in foods—to half fructose and half glucose. At that point it is essentially identical to high-fructose corn syrup.

Fructose is not the same molecule. Glucose is a 6-member ring, but fructose is a 5-member ring. Sucrose (table sugar) is 50 percent glucose and 50 percent fructose, and HFCS is 42-55 percent fructose.

If you received your fructose only from vegetables and fruits (where it originates) as most people did a century ago, you'd consume about 15 grams per day. Today the average is 73 grams per day which is nearly 500 percent higher a dose and our bodies simply can't tolerate that type of biochemical abuse. Furthermore, in vegetables and fruits, the fructose is mixed in with fiber, vitamins, minerals, enzymes, and beneficial phytonutrients, all of which help moderate the negative metabolic effects. So it's not that fructose itself is "poisonous"—it's the biologically inappropriate doses you're exposed to that make it hazardous to your health and well-being.

How High Fructose Corn Syrup has Decimated Human Health

We now know, without a doubt, that it's the excessive sugar content in the modern diet that is taking such a devastating toll on people's health. According to GreenMedInfo.com, scientific studies have linked fructose to about 78 different diseases and health problems[iii]. Select the hyperlinks provided to review how fructose may:

- Raise your blood pressure, and cause nocturnal hypertension
- Insulin resistance / Type 2 Diabetes
- Non-alcoholic fatty liver disease (NAFLD)
- Raise your uric acid levels, which can result in gout and/or metabolic syndrome
- Accelerate the progression of chronic kidney disease
- Intracranial atherosclerosis (narrowing and hardening of the arteries in your skull)
- Exacerbate cardiac abnormalities if you're deficient in copper
- Have a genotoxic effect on the colon
- Promote metastasis in breast cancer patients
- Cause tubulointerstitial injury (injury to the tubules and interstitial tissue of your kidney)
- Promotes obesity and related health problems and diseases
- Promotes pancreatic cancer growth

High fructose corn syrup (HFCS) was invented in Japan in 1966 and introduced to the American market in 1975. Food and beverage manufacturers quickly began switching their sweeteners from sucrose (table sugar) to corn syrup when they discovered that high fructose corn syrup (HFCS) could save them a lot of money. Sucrose costs about three times as much as HFCS. HFCS is also about 20 percent sweeter than table sugar, so you need less to achieve the same amount of sweetness.

In the mid 1970s, dietary fats were blamed for heart disease, giving rise to the "low-fat craze," which resulted in an explosion of processed nonfat and low fat convenience foods—most of which tasted like sawdust unless sugar was added. Fructose was then added to make all these fat-free products more palatable. Yet as the low-fat craze spread, rates of heart disease, diabetes, and obesity skyrocketed...

Clearly, there was a major flaw in the plan, and it's not difficult to see that trading fat for sugar is *not* a wise move.

The problem is that excessive fructose consumption leads to insulin resistance, and insulin resistance appears to be the root of many if not most of the diseases listed above. Insulin

resistance has even been found to be an underlying factor of cancer.

How Fructose Increases Insulin Secretion and Worsens Your Insulin Sensitivity

Interestingly, recent research published in the *Proceedings of the National Academy of Sciences* shows that fructose can activate taste cells found on your pancreas, a reaction that can increase your body's secretion of insulin[iv]. And, while this is of particular concern for people prone to diabetes, if statistics are any indication, this could include virtually *everyone*.

At present, one in four Americans already have either pre-diabetes or some form of diabetes, and type 2 diabetes is directly linked to your diet, so anyone on a high-fructose diet can be at risk.

In this study, the researchers were able to demonstrate that fructose activates the same proteins in your pancreatic cells that your tongue uses to taste sweets. And when these cells are exposed to both glucose and fructose, they secrete *more* insulin than they do when exposed to glucose alone. According to *Science News*[v]:

"Most sugars join the [metabolic assembly line] at a point where a supervisory enzyme can control the flow of goods. But fructose comes in farther down, where it can lead to an overproduction of fat. And because fructose ... doesn't stimulate the same insulin response that glucose does, the hormone isn't doing the other regulatory things it usually does, like moderating appetite."

Limiting Sugar is Also Vital for Longevity

By increasing your insulin and leptin levels (and subsequently decreasing receptor sensitivity for both of these vital hormones), excessive sugar/fructose consumption not only increases your risk of type 2 diabetes, it also accelerates aging in general. In fact, limiting sugar in your diet is a well-known key to longevity, because of all the molecules capable of inflicting damage in your body, sugar molecules are probably the most damaging.

Two years ago, the journal Nutrients published an excellent report on the impact of fructose on aging.[vi] Fructose is a particularly potent pro-inflammatory agent that creates advanced glycation end products, commonly known as "AGEs."

AGEs are a complex group of damaging compounds that form when sugar reacts with amino acids. Besides oxidation, glycation and the subsequent formation of AGEs is one of the major molecular mechanisms causing ongoing damage in your body, which leads to disease, (premature) aging and, eventually, death. According to the authors:

"[T]he data are supportive that endogenous AGEs are associated with declining organ functioning. It appears that dietary AGEs may also be related... As of today, restriction of dietary intake of AGEs and exercise has been shown to safely reduce circulating AGEs, with further reduction in oxidative stress and inflammatory markers."

In short, if you want to live a long healthy life, you need to restrict your consumption of sugar, particularly fructose. As a standard recommendation to limit glycation, I strongly advise keeping your TOTAL fructose consumption below 25 grams per day.

Most people would be wise to limit their fructose to 15 grams or less however, especially if you have elevated uric acid levels, which can be used as a predictor for fructose toxicity. This includes keeping track of your fructose intake from whole fruits. To evaluate the fructose content of many common fruits, please see this helpful fructose chart. I recommend this lower level of 15 grams a day simply because if you consume processed foods or sweet beverages at all, you're virtually *guaranteed* to consume "hidden" sources of fructose that can have a major impact on your health.

When I have mentioned this in the past many people have strongly disagreed with me as they believe fruit is fine because it is natural. And it may be ok for some people, especially those doing long and intense exercise sessions. However, there is an easy way for you to find out your risk. If your uric acid is above 5.0 would be wise to follow the rule. The higher above 5.0 your uric acid is, the worse your risk for damage. If your uric acid is between 3.5 and 5 you should be fine. I believe I must have a genetic polymorphism for uric acid as mine is always above 5.5 even with intense exercise and less than five grams of fructose a day, so I nearly always avoid fruit.

The authors of that paper offer an in-depth review of the many health hazards of fructose, due to its pro-inflammatory actions:

"Accumulation of AGEs has been found in healthy aging persons, and this accumulation is higher during high glucose concentrations. Microvascular and macrovascular damage, seen in diabetes, is attributed to the accumulation of AGEs in tissues, but it is also associated with atherosclerosis, Alzheimer's disease, end stage renal disease, rheumatoid arthritis, sarcopenia, cataracts, and other degenerative ophthalmic diseases, Parkinson's disease, vascular dementia and several other chronic diseases. For instance, Bar et al. have demonstrated differential increases of AGEs products in Alzheimer's dementia and vascular dementia compared to controls. It has also been suggested that AGEs are involved in the loss of bone density and muscular mass associated with aging."

How to Tame Your Sugar Cravings

If you're struggling with sugar addiction, I recommend trying an energy psychology technique called Turbo Tapping, which has helped many "soda addicts" kick their sweet habit. If you still want to use a sweetener occasionally, here's what I recommend in lieu of sugar:

Use the sweet herb stevia.

Use organic cane sugar in moderation.

Use organic raw honey in moderation.

Avoid ALL artificial sweeteners, which can damage your health even more quickly than fructose. Agave syrup has been touted as a healthy alternative by many, but don't fall for it. It's a highly processed sap that is almost all fructose, and should therefore be avoided.

References:

[i] Nature, February 2, 2012: 482, pages 27-29

[ii] Diet Doctor, February 12, 2012

[iii] Greenmedinfo.com

[iv] *Proceedings of the National Academy of Sciences*, 2012 Feb 6. [Epub ahead of print]

[v] Science News, February 7, 2012

[vi] Nutrients. 2010 December; 2(12): 1247–1265

This Popular Drink May Be Almost as Hazardous to Your Health as Soda

Dr. Mercola,
http://articles.mercola.com, 2010

Dr. Richard Johnson is the chief of the division of kidney disease and hypertension at the University of Colorado, and author of The Sugar Fix, one of the best books on the market on the dangers of fructose.

As one of the physicians on the cutting edge of sugar metabolism research today, his focus is on how the overabundance of sugar in the American diet -- particularly fructose -- is causing obesity, hypertension, diabetes, and a number of other health problems.

The answer to the question in the headline is fruit juice. But before I explain why fruit juice may be as hazardous to your health as soda, let me first give you some background information.

Fructose has become one of my newest health passions for a number of reasons. It is really not well understood how pervasive a negative influence this sugar has on people's health, but even more importantly, it is something that we can easily change, by influencing the food industry to replace it with something healthier.

One of the leading researchers in this field is Richard Johnson, MD, who is the chief of the division of kidney disease and hypertension at the University of Colorado. I've previously interviewed Dr. Johnson about his research into the health dangers of fructose, specifically how fructose causes high blood pressure, obesity, and diabetes.

Here, we continue this discussion, and Dr. Johnson also shares new details of the research he's been involved with since the last interview.

An interesting aside is that at the end of this interview, I was very pleasantly surprised to learn that I had written some of the articles on fructose that he reviewed when he first decided to researched this topic.

It really gave me great joy to know that all the hard work and effort I have put in over the years really is making a difference, not only getting people healthy, but also motivating high integrity scientists to do the right thing.

It is worth noting that Dr. Johnson actually endorses Splenda in his book, *The Sugar Fix*, which was written prior to us getting to know each other, but I recently sent him my book *Sweet Deception*, which outlines the many dangers of artificial sweeteners. He's a true physician and was eager to review the material and update his knowledge on the subject.

There aren't many doctors out there with this type of integrity. I really like Dr. Johnson and believe he's an authentically well-intentioned good guy.

It is not often that a health researcher can open up my eyes to a completely novel and new risk factor for health, as he did with uric acid and fructose, and I will always be grateful to him for that and for his willingness to enlighten us in these interviews.

Uric Acid as a Marker for Fructose Toxicity

One of the surprising facts discussed in our first interview was how detrimental the impact of fructose is on your uric acid levels. It appears as though that process is essential to the damage that fructose causes, and it's actually an excellent marker for toxicity from fructose.

According to the latest research in this area, the safest range of uric acid is between 3 and 5.5 milligrams per deciliter, and there appears to be a steady relationship between uric acid levels and blood pressure and cardiovascular risk, even down to the range of 3 to 4 mg/dl.

Dr. Johnson suggests that the ideal uric acid level is probably around 4 mg/dl for men and 3.5 mg/dl for women.

This is actually the only major biochemical marker that I need to optimize at this point in my life, which most likely suggests that I am particularly sensitive to fructose intake and that it's best for me to keep my levels as low as possible.

This is most likely due to genetics and would explain why most of my paternal relatives have, or have died from, diabetes. That side of the family is most likely particularly sensitive to fructose.

So I would STRONGLY encourage everyone to have their uric acid level checked to find out how sensitive you are to fructose. (I'll discuss this strategy further, in just a moment.)

As you know, two-thirds of the US population is overweight, and most of these people likely have uric acid levels well above 5.5. Some may even be closer to 10 or above.

Dr. Johnson has developed a program to help people optimize their uric acid levels, and the key step in this program is *complete elimination of fructose*.

Results of the Latest Clinical Trial

"We've just finished a clinical trial where we gave a low fructose diet to overweight and obese adults from Mexico City." Dr. Johnson says.

"We tried two different low fructose diets, but first, before we go into that, we think that the effects of fructose are independent of its energy intake. So,table sugar (sucrose) -- which contains fructose and glucose -- although there is a caloric component, we think that the effects of fructose are not specifically related to the calories but rather to its mechanism, of which uric acid is a driving part.

... [Uric acid levels] being too high seems to really increase the risk for diabetes and high blood pressure, kidney disease and obesity. And in fact, there are more and more papers coming out showing that connection."

One of the questions that Dr. Johnson sought to answer in his latest trial was whether or not you need to reduce ALL fructose in your diet, or just reduce the fructose primarily in added sugars like high fructose corn syrup and table sugar.

After comparing the two low fructose diets -- one that was strictly low fructose, and the other that had low fructose but allowed natural fruits – they discovered that both diets had remarkable effects in reducing metabolic syndrome.

Both diets improved triglycerides, insulin resistance and blood pressure.

A Novel Idea -- Using Uric Acid as a Marker of Susceptibility to Fructose Damage

Going back to the issue of genetic variability, it seems that some people may be able to process fructose more efficiently, and the key to assess this susceptibility to fructose damage lies in evaluating your uric acid levels.

Dr. Johnson agrees that using uric acid levels as a marker to identify your susceptibility could be a reasonable approach.

So, for example, if you're passionate about fruit and typically eat large amounts of fruit, but have a uric acid level above 5 (or better yet, 4 if you're a man, and 3.5 if you're a woman), then you may want to consider lowering your fruit consumption until you're able to optimize your uric acid levels.

"*We have some evidence from our laboratory that uric acid actually regulates the sensitivity to fructose,*" Johnson says.

"So the higher your uric acid, the more sensitive you are to the effects of fructose.

... So I agree with you. If you measure your serum uric acid and it's very significantly high, you probably will get into more trouble with fruit juices and large amounts of fruit than other individuals would.

That seems to be the take home message from our current research."

Revisiting Fruit Consumption

So it appears as though whole fruits, even though they contain fructose, may not be nearly as problematic as fructose from added sugars. One of the reasons for this is believed to be because whole fruits contain high amounts of natural antioxidants, as well as other synergistic compounds that may help counter the detrimental effects of fructose.

"*When I originally wrote my book, I was concerned that if you eat large amounts even of natural fruits you could get into trouble,*" Johnson says, "*and I have had cases where people were eating very large amounts of natural fruits.*

When I cut it out or reduced it, they've had dramatic weight loss.

So I've had a number of people like this who are eating almost a pure fruit diet, and I don't think that that's particularly good, but I think that the normal individual eating two to four natural fruits a day probably is going to be fine."

The key here though is WHOLE fruits, but I still remain convinced that many people, especially those that have insulin resistance, such as those with:

- Diabetes
- High blood pressure
- High cholesterol
- Overweight

should be particularly careful about limiting their fructose from fruit to 15 grams per day or less.

How to Know if Fruit May Be a Problem for You

However the NEW appreciation is that if you have your uric acid level checked and have a level of 4 for men, or 3.5 for women, you probably are at a very low risk for fructose toxicity and can be more liberal with these limits.

The higher your uric acid though, the more you need to limit or even avoid fructose until your uric acid level normalizes.

Fruit	Serving Size	Grams of Fructose
Limes	1 medium	0
Lemons	1 medium	0.6
Cranberries	1 cup	0.7
Passion fruit	1 medium	0.9
Prune	1 medium	1.2
Apricot	1 medium	1.3
Guava	2 medium	2.2
Date (Deglet Noor style)	1 medium	2.6
Cantaloupe	1/8 of med. melon	2.8
Raspberries	1 cup	3.0
Clementine	1 medium	3.4
Kiwifruit	1 medium	3.4
Blackberries	1 cup	3.5
Star fruit	1 medium	3.6
Cherries, sweet	10	3.8
Strawberries	1 cup	3.8
Cherries, sour	1 cup	4.0
Pineapple	1 slice (3.5" x .75")	4.0
Grapefruit, pink or red	1/2 medium	4.3
Boysenberries	1 cup	4.6
Tangerine/mandarin orange	1 medium	4.8
Nectarine	1 medium	5.4
Peach	1 medium	5.9
Orange (navel)	1 medium	6.1
Papaya	1/2 medium	6.3
Honeydew	1/8 of med. melon	6.7
Banana	1 medium	7.1
Blueberries	1 cup	7.4
Date (Medjool)	1 medium	7.7
Apple (composite)	1 medium	9.5
Persimmon	1 medium	10.6
Watermelon	1/16 med. melon	11.3
Pear	1 medium	11.8
Raisins	1/4 cup	12.3
Grapes, seedless (green or red)	1 cup	12.4
Mango	1/2 medium	16.2
Apricots, dried	1 cup	16.4
Figs, dried	1 cup	23.0

What About Fruit Juices?

Fruit *juice* typically contains very high concentrations of fructose, which will cause your insulin to spike and may counter the benefits of the antioxidants. Previous studies have already clearly demonstrated that drinking large amounts of juice dramatically increases your risk of obesity. Children are at particular risk here, since so many children are given juice whenever they're thirsty instead of plain water.

For example, research has revealed that 3- and 4-year-olds who carry extra weight and drink just one to two sweet

drinks a day double their risk of becoming seriously overweight just one year later.

When buying commercial fruit juice, you need to check the label, as the majority of fruit juices contain high fructose corn syrup and artificial flavors in addition to concentrated fruit juice.

But even freshly squeezed fruit juice can contain about eight full teaspoons of fructose per eight-ounce glass!

Naturally, some fruits are less problematic than others, as the amount of fructose and antioxidants vary from fruit to fruit.

"For example, pear juice and apple juice are very, very low in vitamin C but very, very high in fructose," Johnson says, *" and so those particular kinds of juices maybe worse than orange juice or grapefruit juice which have high amounts of vitamin C.*

Now, apples contain other compounds like quercetin, which is an antioxidant that may block some of fructose's effects. So, you know, the verdict is still out in terms of which juice is better and which juice is worse.

But in general, with apple juice and pear juice, I would be more concerned about those types of juices because they are very, very high in fructose and relatively low in antioxidants."

For all these reasons, it is wise for most to limit their intake of fruit juice, especially if your uric acid is above the ideals recommended.

If you suffer from any of the four health problems I just listed above, you would be best off avoiding fruit juices altogether until you've normalized your uric acid and insulin levels.

Is Glucose a Safer Alternative Sweetener?

Although you cannot buy "glucose" commercially, it's available under the name of "dextrose."

It's relatively inexpensive, priced at about a dollar a pound. It's not as sweet as table sugar or fructose, but it also doesn't seem to cause the same health problems – at least for those who are not diabetic or insulin resistant.

Dr. Johnson explains:

"It is absolutely true that if you take a laboratory animal and you feed it glucose or dextrose or starch, it will not get into trouble. It will stay skinny. It will stay healthy. Rice diets are high in starch and historically have been associated with being lean.

In contrast, if you give sugar or fructose to an animal, they'll rapidly develop features of metabolic syndrome, obesity, and so forth. And you can pair-feed animals, so one animal gets exactly the same number of calories as the other one, but it's only the sucrose- or sugar- or fructose-fed animals that develop the features of metabolic syndrome. This makes one believe that starches safe, and this is in fact what I wrote in the book.

Now, as we've done more studies, (obviously if you're a diabetic, glucose is not good because in diabetes you cannot handle glucose metabolism)... one of the things that we're just discovering in the laboratory -- actually it's been known but we're trying to figure out how important it is -- people who are diabetic, and people who are severely insulin resistant... can make fructose from the glucose through a pathway called "the polyol pathway."

We are now studying it and we do think that there is an endogenous fructose pathway.

We don't know how important it is yet, but we do know that you can make fructose from glucose, especially if you're diabetic or if you're severely insulin resistant.

Since a lot of people who are very, very overweight and are trying to lose weight, some of them can be insulin resistant. This does throw a new twist into the story... We're trying to figure out the impact of this.

But certainly if you're not insulin resistant, dextrose or starch will be ok."

According to Dr. Johnson's data, which he claims is "unequivocal," starch and dextrose (glucose) do NOT cause obesity or diabetes, whereas fructose does.

Interestingly, animal studies have discovered that if an animal eats lots of fructose, over time they become diabetic. Part of this process, however, is that once they become insulin resistant, they activate the polyol pathway and begin to make fructose from *other* sources of food as well!

This is quite remarkable, and a strong testament to the need to severely limit your fructose intake.

It's also offers an explanation for how and why the obesity epidemic has flourished the way it has since the introduction of HFCS into most of our processed foods.

"It's a little bit more complicated than we had originally thought," Johnson says, *"but the bottom line is: If you're trying to avoid gaining weight; if you're trying to avoid becoming obese or diabetic, the best thing you can do is to cut back on foods that raise uric acid, particularly sugar, fructose and high fructose corn syrup (HFCS).*

That's by far the best approach. Starch in general appears to be safe unless you're severely insulin resistant, in which case perhaps isn't quite as safe as we had originally thought."

Defining Insulin Resistance

Ideally you'll want to have a fasting insulin level below 2. In addition, Dr. Johnson recommends using a simple glucose test to check your fasting glucose.

"The fasting glucose, under 100, suggests that you're not insulin resistant," he says. "If your fasting glucose is between 100 and 125 mg/dl, you probably are insulin resistant to a mild extent, or you have impaired glucose tolerance.

You have what we would call mild insulin resistance and slightly elevated glucose levels for what you would expect."

I agree with Dr. Johnson that this is typically true, however it's still possible to have low fasting glucose yet have significantly elevated insulin levels.

Dr. Johnson explains: "Yes, if you have hyperinsulinemia, in general what happens is that as you become insulin resistant, your insulin levels go up to help keep your blood sugar down. So if you have a particularly robust insulin response, you could keep your glucose in the normal range for some time."

So, in this case, you're essentially pre-diabetic and need to take steps to improve your insulin sensitivity, and the most potent way is to reduce or eliminate fructose.

A Word on Agave

I got a lot of push-back after I published my report on agave, which many health conscious people believe is a safe, all-natural, healthy sweetener. However, agave can contain anywhere between 55 to 90 percent fructose!

Some companies were very upset with our article and refuted the information so much so that we actually purchased three of the most popular "natural" agave products and had them independently tested, at our expense, at a commercial laboratory.

The results came back last week and they support what I said, that they were high in fructose. The range was 59 to 67 percent fructose. I am in the process of writing an entire report on it that should be published in the next few weeks.

Fructose content is also high in honey, which contains about 70 percent on average.

In addition, many, if not most of the commercial supplies of agave are processed in a way that's not too dissimilar to the processing of high fructose corn syrup.

"We have not done any specific research with agave or with honey," Johnson says. "But I do believe that those two compounds, because they're so high in fructose, probably will engage the same pathways that we see when we give fructose or sugar to animals.

So I would not recommend those as sweeteners to use daily."

Learn More…

I strongly recommend you listen to this interview in its entirety, or read through the transcript. In it, Dr. Johnson also discusses the potential benefits, as well as the risks, of using the drug allopurinol (traditionally used to lower uric acid levels in patients with severe gout) to treat heart disease, diabetes and even obesity.

We also discuss the lifestyle adjustments that can work together synergistically to optimize your health benefits, and delve into two additional studies that Dr. Johnson recently submitted to *Science*, and *Nature*. Hopefully they will be accepted for publication by both of these prestigious scientific journals.

I have written about the dangers of sugar for a long time, and of course, variables like exercise and calorie intake play a role in obesity, but I am fully convinced that if we can educate the public about the primary role fructose holds in creating obesity, we can actually reverse and eventually help to eliminate the obesity epidemic.

So please, keep learning, and keep sharing this information with your family and friends. I also highly recommend reading Dr. Johnson's book, The Sugar Fix, as it offers a real solution to several devastating health problems. Although, as I stated earlier, he supports the option of using artificial sweeteners which I do not recommend.

The trend will not magically reverse itself – it will require each and every one of you to become educated, savvy consumers, and it will require that you bring back home cooking; using fresh, whole, organic foods.