1. Dr. Sten Ekberg What Happens When You Eat Sugar? October 2020 (13 minutes)
https://youtu.be/FjgYvp7pkpI

Hello, Health Champions. I think everyone today is aware that sugar's not all that great for you, but because it's everywhere, it's just so easy to **slip up**. So today I want to talk about what really happens in your body when you eat sugar so that you'll understand exactly why to just say no…

I'm a **holistic doctor** and a former Olympic **decathlete**, and if you want to truly master health by understanding how the body really works, make sure you subscribe and hit that notification bell so you don't miss anything.

When people talk about sugar, they're generally talking about small pieces of **carbohydrate**, and it's interesting that even though this is something that's very natural and is very abundant and is in almost every food—in small amounts it's okay—in larger amounts it's **devastating**.

So sugar is small pieces of carbohydrate: that means disaccharides, meaning two **molecules** linked together, and monosaccharides, meaning a single molecule. The most common disaccharide is sucrose. That's what we're talking about when we say table sugar, white sugar, or refined sugar. They're all sucrose, which is a fructose molecule and a glucose molecule linked up together. Even though that's a super tiny molecule, it's still too big to get into your bloodstream, so we need an enzyme to split that down the middle so that we have individual molecules before it can get into your bloodstream.

The other common disaccharide is maltose, and carbohydrate can be strung together in thousands of little units together, and then when we eat them as a form of **starch**, the body lops them off two at a time and the result is maltose. So that's a glucose linked to a glucose. Now once we split them up, we get glucose, and glucose is what we're talking about when we're talking about blood sugar. So when we mention blood sugar or blood glucose … when we measure that, we're talking about how much of this molecule is floating around in your bloodstream. The **glycemic index**, a measurement of how quickly the glucose in your blood increases after you eat something, is, for glucose, one hundred. That's because that's a **benchmark**. That's the reference of glycemic index.

Fructose, on the other hand, has a glycemic index of only 20. So 100 is really fast, and 20 is really slow. A lot of people thought for the longest time that fructose was great for **diabetics**. They used it to sweeten candy, desserts and treats because it didn't trigger blood sugar. They thought blood sugar was the only problem, and in a moment, we'll talk about why it's not the only problem.

Sucrose has a glycemic index of 60, and that's because it's half fructose and half glucose, so it ends up right between 20 and 100. Maltose, interestingly, is a hundred and ten, so even though this is linked together, for some reason when you eat maltose by itself then it actually has a higher glycemic index than glucose.

Now in reality we eat maltose as starch, so bread and rice and potatoes and all of the starchy things—the **comfort foods**—they are starch, which is long chains of glucose. We chop them up into maltose, so it takes a little bit of time to break this up, and that's why most of those starchy foods have glycemic indices in the 70s and 80s. You want to stay away from starch because this very, very quickly becomes glucose.

Now when we talk about health problems, the consequences of eating sugar, there are two different problems. First, we talk about glucose, and that has to do with how it affects blood sugar levels. The body really likes to have a narrow level of blood sugar somewhere around 100. So if you're on a low carbohydrate diet, you probably want to be safe from 70 to 110. That's a good level, and if you eat low carbohydrate—if you eat protein and fat and fiber, and very little carbohydrate, your blood sugar is never really going to get outside this range at all. After you eat, it will rise very slowly. It will drop very slowly, and it will be stable.

Now when you eat sugar and processed foods, your blood sugar will start jumping because your blood sugar goes up very fast, and now you get a blood glucose roller coaster. Anytime it's high, you're going to have stress. You're going to have a threat to your nervous system, so your body releases tons of insulin to bring the glucose down. So now you have **hyperinsulinemia**—too much insulin in the bloodstream—and when you have a lot of insulin, it's going to drop quickly. So now at the bottom end of this you get **hypoglycemia** when your blood glucose is too low. When you have hypoglycemia, you have unstable energy. You feel good at certain times as you have energy, and the next moment you have no energy and your mood follows that energy, so you have mood swings.

The other thing that happens when you have blood sugar swings is that any time it gets low and it's unstable, you get serious cravings and hunger. So that's the thing to keep in mind. A calorie is not just a calorie because sugar also makes you hungry.

The second problem is fructose. Even though it hardly affects blood sugar at all, it is a stress on the liver. It's a huge burden because the liver is the only tissue that can **metabolize** fructose. All the fructose has to pass through the liver. The fructose turns into glucose. The liver converts it, and then that turns into fat, and we end up with a fatty liver, or non-alcoholic fatty liver disease. That goes hand in hand with **insulin resistance** and **type 2 diabetes**. Then if you put the two together, you have a double whammy. You have the liver clogging up because of the fructose, and you have the roller coaster of blood sugar from glucose. So now you end up with weight gain, the belly fat. You get insulin resistance, fatty liver, type 2 diabetes, but also you get the whole **slew** of things associated with **metabolic syndrome** which are **hypertension**—high blood pressure—as well as **cardiovascular disease** and even **dementia**. But as if it wasn't enough, that sugar is directly causing the majority of things that kill us.

It affects a whole bunch of other things as well—your **digestive tract**, for example. It starts with the mouth where it causes **cavities**. That's what we tell our kids. You can't have sugar because it causes cavities. It also interferes with **mineral absorption**, so it's related to mineral **deficiencies**, and then it gets really interesting because one of the most **intricate**, one of the most central pieces of human health, is how our **gut** is doing—our **microbiome**. You have more life forms in your gut than you have cells in your body. When you eat sugar, you selectively feed everything you don't want in your body, so the **pathogenic bacteria**—the yeast and the fungus and the parasites—love sugar. It's like a buffet when you feed them sugar. So now you get an imbalance. You get a war zone down in your digestive tract where you're supposed to absorb all these nutrients, and as a result of that war zone you get a **leaky gut**. Because of the leaky gut, pieces that are too large, which are not supposed to not pass through, now pass through that leaky gut into the blood, and you get **food allergies**, which further sets you up for **autoimmunity**. This happens all because of sugar.

But it goes even further. Sugar affects your **hormonal system**—your **endocrine** system. Insulin is one of the most powerful hormones in your body. It has a tendency to dominate all the other hormones. Hormones determine everything about your behavior as far as hunger, **satiety**, sleep cycles, metabolism and so forth are concerned. Normally, we have really small amounts, like parts per million to parts per billion—nanograms worth of this stuff. So we are very sensitive. It's very, very delicate, and insulin is kind of like a sledgehammer in a china shop. It just wipes out and flattens all the other hormones. If you have some hormone imbalances, I suggest you first fix insulin, and then you look at what all the other hormones are doing before you go and take any other measure.

pituitary gland 下垂体	thyroid gland　甲状腺
adrenal gland 副腎	immune system 免疫系

One common problem is **hypopituitary**—an underperforming **pituitary**—because insulin resistance is associated with a low-grade **inflammation** which desensitizes it. It keeps the pituitary from responding the way it's supposed to, and as a result, we also get hypothyroid, meaning the pituitary isn't issuing the proper orders to the thyroid.
Of course, another cause of hypothyroid is autoimmune Hashimoto's disease. Next, we have **adrenal** fatigue. Anytime your blood sugar fluctuates, but especially at the hypoglycemic part and when you're stressed, then your adrenal glands have to compensate for those blood sugar swings and make **cortisol**. So now you're stressing out your adrenals. A result of that is PCOS, **polycystic ovarian syndrome**, which is very common in women. It is an insulin resistance problem. It is a common cause of **infertility** as well as irregular periods.

Females start developing male **traits** such as **hirsutism**, which is unwanted body hair, such as dark thick hair on the upper lip, and male pattern baldness. In men the opposite can happen. So men can start developing feminine traits like man boobs, for example, and because this often happens later in life, at 50 to 60 years old, a lot of times grandma starts looking like grandpa and vice versa. So think about this and take care of it because it's really tough on the grandkids when they can't tell grandma and grandpa apart.

And here's a quick summary of everything that sugar causes:

extreme blood glucose variations	dementia
hypoglycemia	weight gain, fat belly, fatty liver (fructose)
unstable energy (highs and lows)	insulin resistance
cravings and hunger	type II diabetes
hypopituitary function	hypertension (high blood pressure)
hypothyroid function	tooth decay
adrenal fatigue	mineral deficiency
polycystic ovary syndrome (PCOS)	dysbiosis (unhealthy intestinal bacteria)
masculinization of females	leaky intestines (gut)
feminization of males	autoimmunity
cardio-vascular disease	

Now, because you're really smart and you've watched a lot of videos on this channel, you understand the amazing **recuperative** power, the **restorative** powers of the body. So if sugar causes all this, then you now understand that stopping eating sugar has a really good chance of reversing all or most of this, at least to some degree. So just say no.

Comprehension Questions

1. Explain the difference between glucose, sucrose, fructose, and maltose.

2. Why is fructose good in one way but mostly very bad for health?

3. What is the glycemic index?

4. What is the definition of *hormone*?

5. What is the most common source of maltose in our diet?

6. What is the function of insulin?

7. What happens when there is too much insulin in the blood?

2. A Disease that is Three Times Deadlier than Cancer & Most People Don't Know They Have it

Dr. Sten Ekberg, May 2020 (23 minutes)

https://youtu.be/NDGEYNNXeTs

NOTES

1. 0:00-2:30
   a. introduction: what is the mystery disease causing so many degenerative diseases, such as hypertension, cardiovascular disease, stroke, dementia, kidney failure, cancer, fatty liver, high bad cholesterol (LDL), low good cholesterol (HDL), chronic inflammation, high triglycerides, low immune function, obesity, low autophagy?
2. 2:30
   a. insulin resistance is making people die longer (slow death)—poor quality of life for a long time
   b. long-lasting cancer, heart disease, stroke, hypertension, diabetes…
3. 5:35
   a. four stages of insulin resistance: optimal, slipping, pre-diabetes, diabetes
4. 8:00
   a. diabetes statistics: 30 million in US (10% of the population), 463 million worldwide,
   b. in the US, 114 million are pre-diabetic or diabetic, 300 million if we include those who are slipping
   c. 70% of US population is overweight, 1/3 of the world is overweight
   d. rapid growth in obesity since 1980 in US
   e. diabetes followed this trend and the rest of the world is following both trends
5. 11:00
   a. insulin resistance mechanism--cells get too much stimulus to let insulin in, so they shut down and stop receiving insulin into the cell
6. 13:07
   a. it is useless to use a drug that fixes the insulin resistance of the cells—this doesn't solve the problem of there being too much insulin in the blood
7. 13:40
   a. salesman analogy for insulin resistance--you don't open the door if a salesman shows up too often

8. 15:45
    a. blaming fat, wrong diet guidelines by government health organizations
    b. source of the problem: storing too much fat, lypogenesis—turning sugars into fat
    c. low metabolism, there is a high blood sugar level from sugar and starch in the diet, so insulin goes up, then cells reject insulin, and finally sugars remain in the blood and get converted to fat
    d. insulin resistance made fat cells fat
9. 19:15
    a. WHO recommendation is still wrong: “the cause is calories from fat and sugar, people are less active”
    b. similar advice from other government health agencies
    c. this is 50% wrong because fat is not the problem
    d. WHO advice: increase calories from fruit, vegetables, beans and grains, but aside from vegetables, these are carbohydrates that will still worsen the problem of insulin resistance
10. 20:45
    a. “healthcare” spending in the US is really sickcare spending, treatment of symptoms only
    b. $4 trillion in 2020, $12,000 per person, no one is focused on the root cause
11. 21:50
    a. insulin resistance is strongly connected to the coronavirus pandemic
    b. insulin resistance is the primary factor causing severe infections
    c. insulin resistance increases risk of death by as much as 100 times
    d. pathogens are opportunistic, they don’t kill healthy people
12. 23:00
    a. what are the solutions?
    b. people will not take action if they do not understand the root cause
    c. you must avoid foods that trigger insulin resistance
    d. eat real food, single-ingredient foods, cook it yourself, don’t eat fake, processed food that is full of sugar, fructose, processed starch, and chemical additives (coloring, flavors, preservatives, pesticide residues etc.)
    e. reversing insulin resistance is more difficult than avoiding insulin resistance
    f. reversing insulin resistance requires extra steps: a low carbohydrate/keto diet (ketosis) and intermittent fasting--one or two meals a day
    g. ketosis definition: when there is no sugar in the digestive tract and the bloodstream, the body will switch to burning fat for energy, but this will not happen if the person is still eating carbohydrates

QUESTIONS to review the content of the video

1. What is insulin resistance?
2. Dr. Ekberg said insulin resistance was a cause of many chronic diseases? Name five of them.
3. What does he mean by the term “die longer”?
4. What are the four stages of progression toward insulin resistance?
5. Why is it not a good idea to prescribe medicine that fixes the insulin resistance of cells?
6. What did Dr. Ekberg say is wrong about the diet advice of government health agencies?
7. In his conclusion, what diet advice did Dr. Ekberg recommend as the best way to reverse insulin resistance?