

The Silent Factor Behind Weight Gain (Even If You Don't Eat Sugar!)

By Robert Ferguson

Did you know that your body can create a type of sugar called **fructose**—even if you don't eat it? Fructose plays a significant role in causing **fatty liver**, **high blood pressure**, **elevated uric acid levels**, and **insulin resistance**, which can lead to **weight gain** and make losing weight much harder. Even more surprising, a combination of **salt** and **dehydration** can trigger your body to produce fructose internally! But why does this happen? Let's explore how this process works, why some animals rely on it for survival, and how you can avoid it to protect your health.

Understanding Sugar-Rich Foods and Glucose in Your Blood

When we talk about sugar-rich foods, we are usually referring to **pizza**, **pasta**, **bread**, and **ultra-processed foods** that are high in starch and sugars like **glucose** and **high-fructose corn syrup**. These foods are major contributors to excess glucose in the bloodstream, which can lead to health issues when consumed in large amounts.

Even **table sugar** (called **sucrose**) isn't solely made up of glucose. In fact, sucrose is 50% glucose and 50% fructose. Knowing the health risks associated with high-fructose corn syrup, one of the first nutrition tips I recommend to my clients is to cut down or avoid any products made with it.

However, as you'll learn in this article, even if you reduce your intake of fructose—both natural and manufactured—your body has ways to create it on the inside. This happens when you don't know how to prevent what is called the **Polyol Pathway** from being triggered.

It's also important to note that while **glucose** and **fructose** are naturally found in plant-based foods like fruits and vegetables, these foods are not to be avoided. They provide essential nutrients and should remain a part of a healthy diet.

How the Polyol Pathway Is Triggered

Your body uses the **polyol pathway** to make fructose from glucose (a sugar already present in your bloodstream). This pathway can be triggered by:

1. **The combination of salt and dehydration:** Even without eating glucose, salt and dehydration alone can increase the hormone **vasopressin**, which activates the polyol pathway. This causes your body to convert existing glucose into **sorbitol** and then into **fructose**.
2. **Salt, dehydration, and consuming glucose:** Eating glucose (or sugar-rich foods) along with salt and being dehydrated can amplify this process because it provides more raw material (glucose) for the pathway to convert into fructose.

This means that even if you're careful about limiting fructose in your diet, the right conditions—salt and dehydration—can still lead your body to produce fructose internally.

How Your Body Makes Fructose

Here's how the polyol pathway works in detail:

1. **Glucose converts to sorbitol:** When the pathway is triggered, an enzyme called aldose reductase turns glucose into **sorbitol**.
2. **Sorbitol converts to fructose:** Another enzyme, sorbitol dehydrogenase, then converts sorbitol into **fructose**.
3. **Fructose stimulates fat storage:** Fructose signals your body to store fat, especially in your liver.

This process helps explain why your liver can become fatty even if you're not eating foods directly containing fructose.

Why Does the Body Make Fat?

Your body creates and stores fat as a survival mechanism. Fat doesn't just provide energy—it also acts as a **source of water** when broken down. This is especially helpful when your body is dehydrated, or food is scarce. Some animals use this process to survive challenging environments.

Nature's Example: Animals That Use Fructose to Store Fat

In the wild, certain animals rely on fructose to gain fat for survival. Here are three fascinating examples:

1. **Bears Preparing for Hibernation**
 - Before hibernating, bears eat large amounts of fruit. The fructose in the fruit helps their bodies store fat, which they use for energy and water while sleeping through the winter.
2. **Camels and Their Fatty Humps**
 - Many people think a camel's humps store water, but they're filled with fat. Camels rely on this fat for energy and hydration during long desert journeys. Their bodies break down fat to create both water and energy.
3. **Hummingbirds and Agave Nectar**
 - Hummingbirds drink agave nectar, which is rich in fructose. This helps them build fat reserves to fuel long migrations. During their flights, they burn fat for energy and hydration.

How Fructose Affects Humans

Like these animals, humans also store fat when fructose is present. However, unlike animals, humans don't hibernate or take long migrations, so this fat can accumulate in unhealthy ways. Here are the consequences:

1. **Fatty Liver**
 - Fructose makes the liver store fat, leading to fatty liver disease over time.
2. **High Uric Acid**
 - Fructose raises uric acid levels in the blood, increasing the risk of gout and contributing to high blood pressure.

3. High Blood Pressure

- The combination of fat storage and high uric acid levels can elevate blood pressure, increasing the risk of heart disease.

4. Insulin Resistance

- Fructose contributes to insulin resistance, a condition where your body's cells don't respond properly to insulin, making it harder to regulate blood sugar levels.

5. Unwanted Weight Gain and Difficulty Losing Weight

- Insulin resistance and the fat storage signals triggered by fructose lead to excess body fat, which makes losing weight more challenging. Over time, this cycle can contribute to obesity and other metabolic health problems.

The Role of Vasopressin and Aldosterone in Blood Pressure and Fat Storage

When you're dehydrated or consume too much salt, your body releases hormones like **vasopressin** and **aldosterone** to help maintain hydration and regulate blood pressure. Here's how they work:

- **Vasopressin** reduces how much you pee, helping your body retain water. However, it also signals your body to store fat by activating the polyol pathway, increasing fructose production.
- **Aldosterone** helps your body retain sodium, which in turn causes the body to hold onto more water. While this helps maintain blood pressure in the short term, excessive salt intake combined with aldosterone activity can lead to chronically high blood pressure.

Together, vasopressin and aldosterone contribute to maintaining hydration but can also lead to fat storage and elevated blood pressure when salt intake or dehydration is excessive.

How to Protect Your Health

The good news is that you can take simple steps to prevent your body from making too much fructose. Here's how:

1. Drink Water Before Salty or Sugary Meals

- If you're eating a large pretzel, an ultra-processed meal, or any food rich in sugar and salt, drink a glass of water about 5–10 minutes beforehand. This helps dilute the salt in your blood, reducing the likelihood of activating the polyol pathway.

2. Stay Hydrated Throughout the Day

- Regular hydration keeps vasopressin and aldosterone levels balanced, reducing the body's tendency to store fat unnecessarily.

3. Limit Processed Foods

- Avoid snacks, drinks, and meals that are high in added sugar and salt.

4. Choose Whole Foods

- Eat close to nature by focusing on fresh fruits, vegetables, and whole grains when possible.

Takeaway

Fructose is a powerful survival tool used by animals like bears, camels, and hummingbirds to store fat for energy and hydration. But in humans, excess fructose—whether eaten or created by the body—can lead to fatty liver, high blood pressure, weight gain, and some believe Alzheimer's (type 3 diabetes).

The key isn't just avoiding salt and sugar but staying hydrated. Drinking water before meals rich in salt and sugar can help dilute their effects, keeping your body from producing excess fructose and storing unnecessary fat. Small, simple changes like drinking water can make a big difference in protecting your health.

References

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