

# Learn About Sugar

Consume in moderation

## Sugar and Fructose

The sugar we consume today is more like a drug than food because it leaves the body more depleted. It provides no nutritional value and consumes essential vitamins and minerals so that it can be metabolized in the body.

Added sugars like high fructose corn syrup and pure crystalline sugar cause a massive glycemic load on the body. This overwhelms the body resulting in oxidative stress, hyperglycemia, and hyperinsulinemia.

Sugar is a term for many different types of carbs which are divided into monosaccharides (simple sugars) and disaccharides.

Fructose = the predominant fruit sugar that you get from natural fruits but it is also found in refined sugars like table sugar and high fructose corn syrup.

Glucose = naturally found in fruits and vegetables. When you digest starch it gets broken down into glucose. (Glucose syrup is a processed liquid used in a lot of processed foods with a bigger impact on your blood sugar levels.

Sucrose = table sugar made up of 50% glucose and 50% fructose. Can come from natural sources but most comes from processed foods.

Consumption of refined sugars is linked to fatty liver disease, weight gain, insulin resistance, type 2 diabetes, hypertension, and cardiovascular disease.

Sugar, especially fructose, causes worse impaired glucose tolerance than other refined carbs like starch or glucose, even when the calories are the same.



Photo: Herbal Support Vinegar. Our apple cider vinegar infused with herbs!



Photo: Garden Melody Cupcake. Zucchini carrot cake infused with dandelion leaf and topped with a whipped sweet potato frosting, 'Green Honey' drizzle is infused with Chlorella, Ginger, and Cinnamon.

## Consume in moderation

### Chronically elevated blood sugar leads to complications

Glucose is absorbed directly through the small intestine into the bloodstream and raises your blood sugar level faster than other sugars. This stimulates the release of insulin, which is a peptide hormone produced by the pancreatic beta cells and is responsible for regulating energy metabolism and nutrient storage

Fructose also gets absorbed directly through the small intestine into the bloodstream but does not raise your sugar and insulin as much. However, the body can only handle a small amount of fructose at once. Over consumption can lead to visceral fat accumulation.

Fructose metabolism can also deplete ATP in the liver by damaging mitochondria and causing oxidative stress. This results in an increased appetite and hunger due to low ATP levels. What's happened is you've obtained calories from the sugar, but it has no nutrients and depletes energy reserves to process it so you feel deprived and get the signal to continue seeking food for more energy.

When your body is using too much sugar you suppress fat oxidation which results in high triglycerides. Over time the excess triglycerides begin to interfere with insulin production and cause insulin resistance.

Insulin resistance is when your cells are not responding to the message of insulin. As a result, glucose doesn't get into the cell and stays elevated in the bloodstream. Prolonged insulin resistance will cause Type 2 diabetes and hyperglycemia.

In our modern industrialized society, it's hard to find someone who is malnourished of calories and macronutrients (protein, carbs, fats) but almost everyone is deficient in micronutrients, especially minerals. Your body needs micronutrients for a wide range of important functions like energy and insulin production. Deficiencies in certain minerals can promote the development of diseases.

It's important not to overconsume sugar. Excess sugar intake releases glucocorticoids and cytokines that promote the production of triglycerides and visceral fat around the organs. It also stores fat in the liver and muscles and reduces insulin sensitivity which leads to insulin resistance.

The intake of large amounts of added sugars is harmful for energy production and overall health. It has been linked to developing metabolic syndrome, cardiovascular disease, fatty liver disease, and premature death. It is estimated that the average person consumes around 400-800 calories of sugar every day which equals about 20-40% of a 2,000 calorie diet. These are empty calories with no nutritional value.

Remember, your blood sugar and insulin response will always be determined by all of the foods you eat together. Pairing your sugar with protein or apple cider vinegar can greatly affect that response.

# Lowering Glucose Spikes

## Here are some things you can add to your meal to lower the rise in glucose

Protein can significantly lower glycemic load. A high protein meal for breakfast has been shown to reduce the glucose response at lunch.

Olive oil is considered one of the healthiest fats and reduces the glycemic response to a high glycemic meal. It can also lower fasting glucose and insulin.

Exercising daily has been shown to reduce glucose levels. Sitting on the couch after a meal is one of the worst things you can do for your glucose levels. Going for a short walk before or after eating lowers glucose and triglycerides by 50%.

Eating nuts at least 5x a week is associated with a 50% lower diabetes risk and 20% lower coronary artery disease risk.

Tea is high in polyphenols and catechin content which enhances the action of insulin. Habitual tea consumption is linked to a lower risk of diabetes.

Green tea has been found to reduce the risk of diabetes because of the high amount of antioxidants.

Black tea lowers glucose levels in both normal and pre-diabetic individuals. It contains antioxidant compounds that lower cholesterol and glucose.

Chamomile tea is a common herbal tea that can lower blood sugar levels, it also has many other wonderful benefits!

Hibiscus tea is a flavorful tea that has been shown to lower insulin resistance and hyperglycemia. It can also lower oxidative stress.

Lemon balm is another great herbal tea that contains essential oils that can help promote cellular glucose uptake. Taking 700 mg of lemon balm extract capsules for 12 weeks has shown to significantly lower fasting blood glucose.



Photo: Liver protector tea blend. Used to strengthen and protect the liver. Available at [www.theapothecarycafe.org](http://www.theapothecarycafe.org)



Picture Caption: To make your document look professionally produced, Word provides header, footer, cover page, and text box designs that complement each other.

## Paired with Herbs and Spices

A fun and simple way to enhance nutrient absorption

Ceylon cinnamon can reduce glucose response however you must be careful with the kind you buy. Conventional Cinnamon is cassia cinnamon and may cause liver damage in high amounts. Ceylon cinnamon can also be used in tea, which has been found to reduce blood sugar levels after a meal.

Turmeric and its main bioactive compound curcumin can reduce blood

sugar levels and can reduce overall body fat, visceral fat, waist circumference, insulin resistance and triglycerides. To boost bioavailability pair it with black pepper!

Garlic is beneficial in lowering blood glucose levels, thanks to the main bioactive compound allicin. It can improve insulin sensitivity and metabolic syndrome. 1-2 cloves are likely enough for most of the health benefits.

## Apple Cider Vinegar

One of the most well-known types of vinegar with a lot of evidence that it can reduce blood sugar levels significantly. Vinegar contains many bioactive compounds that have glucose lowering effects and can improve insulin sensitivity. It also helps with weight loss and satiety.

Vinegar contains anti-bacterial properties that help to eliminate pathogens. 1-2 tbsp diluted into 8oz of water and taken orally can reduce visceral fat, waist circumference and triglycerides.

Apple cider vinegar is 5-6% acetic acid, regular vinegar is significantly higher.

Remember that acetic acid can be harmful to the throat and teeth when consumed by itself. It's always better to dilute in olive oil or water before consuming.



Photo: Plant infused apple cider vinegar.