

## Consumer Information and Education

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# Ketogenic diet

## What is it?

The ketogenic diet is a high-fat, very low-carb diet. It usually limits carbs to 20-50 grams daily. This forces the body to break down fat for energy.

The body breaks down fat into molecules called ketone bodies. These ketone bodies can be used for energy. The classic ketogenic diet, which is used to reduce seizures in children, requires up to 4 times as many calories from fat as from carbohydrate and protein.

A very strict form of the ketogenic diet is used for seizure disorders in people with hard-to-treat epilepsy. Less strict forms of the ketogenic diet are used for obesity and diabetes. Ketogenic diets are also used for migraine headaches, Parkinson disease, polycystic ovary syndrome (PCOS), and many other conditions, but there is no good scientific evidence to support many of these uses.

Don't confuse the Modified Atkins Diet, a type of ketogenic diet, with the Atkins diet. Also don't confuse the ketogenic diet with "Keto diet pills." These are not the same and don't have the same effects.

## Is it Effective?

The Effectiveness ratings for **Ketogenic Diet** are as follows:

### Possibly Effective for...

- **Diabetes.** Following a ketogenic diet seems to improve blood sugar control in people with type 2 diabetes.
- **Seizure disorder (epilepsy).** A strict ketogenic diet that is high in fat and very low in carbohydrates can reduce seizures in some people with hard-to-treat epilepsy.
- **Obesity.** Following a ketogenic diet that limits carbohydrate intake to less than 50 grams daily can reduce body weight by 10% to 30% in 1 year. But it's not clear if it works better than other diets that limit calorie intake.

There is interest in using ketogenic diet for a number of other purposes, but there isn't enough reliable information to say whether it might be helpful.

## Is it safe?

**When taken by mouth:** The ketogenic diet is likely safe for most adults when used for up to 1 year. The most common side effects include constipation, fatigue, dizziness, headache, weakness, nausea, diarrhea, and stomach pain. The long-term safety of the ketogenic diet in adults is unknown. It is important to ensure any diet remains balanced and contains nutrient-rich foods.

## Special Precautions & Warnings:

**Pregnancy:** There isn't enough reliable information to know if the ketogenic diet is safe when pregnant. Ketone bodies are chemicals made in the body when people follow a ketogenic diet. There is some concern that these chemicals might pass to the baby and slow down growth during pregnancy and after birth. Don't follow this diet unless under the care of a healthcare professional.

**Breast-feeding:** The ketogenic diet is possibly unsafe when breast-feeding. Following a very-low carbohydrate ketogenic diet when breast-feeding might increase the risk for a serious health issue called ketoacidosis. Don't follow this diet unless under the care of a healthcare professional.

**Children:** The ketogenic diet is possibly safe when used by children under the care of a doctor, short-term. There is some concern about the ketogenic diet when used long-term. When used for more than 2 years, the ketogenic diet has been linked with slowed growth, fractures, and kidney stones in children.

**Heart conditions:** Use with caution. The ketogenic diet might worsen certain heart conditions.

**Diabetes:** Following a very-low carbohydrate ketogenic diet might increase the risk for diabetic ketoacidosis (DKA), a serious complication of diabetes. If you have diabetes, speak with a healthcare professional before starting the ketogenic diet.

**Acid reflux:** Some ketogenic diets are high in fat. High-fat diets can worsen symptoms of acid reflux.

**High levels of fat in the blood:** Some ketogenic diets are high in fat. Diets high in fat can increase levels of cholesterol and other fats called triglycerides. This might be a problem for people who already have high levels of these fats in the blood. Talk to your doctor before starting the ketogenic diet.

**Liver disease:** The ketogenic diet might cause liver injury and may worsen symptoms of liver disease.

**Problems breaking down fats in the diet:** The ketogenic diet forces the body to break down fat for energy. For people unable to break down fat, the ketogenic diet might lead to serious adverse effects, including coma or death.

**Kidney disease:** The ketogenic diet may worsen kidney disease and has been linked with kidney stone development.

**Weak and brittle bones (osteoporosis):** Long-term use of the ketogenic diet may weaken the bones. Use caution if you are at risk for or have a history of osteoporosis.

**Swelling (inflammation) of the pancreas (pancreatitis):** The ketogenic diet may increase the risk of developing pancreatitis. Use caution if you have a history of pancreatitis or have very high triglyceride levels.

**Surgery:** Certain medications used during surgery contain carbohydrates. Talk to your healthcare provider before any surgery if you are using the ketogenic diet to reduce seizures. Changes to some medications used during surgery might be needed.

## Are there any interactions with medications?

### Medications for diabetes (Antidiabetes drugs)

Interaction Rating = **Moderate** Be cautious with this combination.

Talk with your health provider.

The ketogenic diet might lower blood sugar levels. Following the ketogenic diet while also taking diabetes medications might cause blood sugar to drop too low. Monitor your blood sugar closely.

### Medications for diabetes (SGLT2 Inhibitors)

Interaction Rating = **Moderate** Be cautious with this combination.

Talk with your health provider.

Following the ketogenic diet while taking an SGLT2 inhibitor, a type of diabetes medication, increases the risk of a serious complication called ketoacidosis. If you are taking these medications, speak with your healthcare provider before starting a ketogenic diet.

### Medications that slow blood clotting (Anticoagulant / Antiplatelet drugs)

Interaction Rating = **Minor** Be watchful with this combination.

Talk with your health provider.

The ketogenic diet might slow blood clotting. Following the ketogenic diet while taking medications that also slow blood clotting might increase the risk of bruising and bleeding.

### Medications used for seizures and glaucoma (Carbonic anhydrase inhibitors)

Interaction Rating = **Moderate** Be cautious with this combination.

Talk with your health provider.

Some medications used for seizures and glaucoma can increase the risk of kidney stones. The ketogenic diet might also increase the risk of kidney stones. Following the ketogenic diet along with these medications might increase the risk of kidney stones.

### Medications used to prevent seizures (Anticonvulsants)

Interaction Rating = **Moderate** Be cautious with this combination.

Talk with your health provider.

The ketogenic diet might reduce blood levels of some medications used to prevent seizures. This might lower the effects of these medications and increase the risk of seizures. Levels of medications used to prevent seizures should be monitored in people starting the ketogenic diet.

### Valproate

Interaction Rating = **Minor** Be watchful with this combination.

Talk with your health provider.

Taking valproate might increase the risk of side effects in some people following the ketogenic diet. But this is rare.

## Are there any interactions with supplements?

### Herbs and supplements that might lower blood sugar

The ketogenic diet might lower blood sugar. Following the ketogenic diet while taking supplements with similar effects might lower blood sugar too much. Examples of supplements with this effect include aloe, bitter melon, cassia cinnamon, chromium, and prickly pear cactus.

## Are there any foods to avoid?

*There are no known interactions with foods.*

## How is it used or applied?

The classic ketogenic diet requires 90% of daily calories to come from fat. But there are many other, less restrictive versions of the ketogenic diet that typically allow 20-50 grams of carbs daily. Variations include the medium chain triglyceride diet, modified Atkins diet, modified Mediterranean diet, and low glycemic index treatment. Speak with a healthcare provider to find out which variation of the ketogenic diet might be best for a specific condition. The ketogenic diet isn't suitable for everyone.

## What other names is it known by?

Classical ketogenic Diet, Classic Ketogenic Diet, Classic Long-Chain Triglyceride Ketogenic Diet, Keto Diet, Low Carbohydrate Diet, Low Glycemic Index Treatment, Medium Chain Triglyceride Diet, Modified Atkin's Diet, Very Low Carbohydrate Diet, Very-Low-Carbohydrate Ketogenic Diet.

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