
MODIFIED KETOGENIC DIET

The ketogenic diet (or keto diet, for short) is a low carb, high fat diet that offers many health benefits. In fact, many studies show that this type of diet can help you lose weight and improve your health. Ketogenic diets may even have benefits against diabetes, cancer, epilepsy, and Alzheimer's disease. The ketogenic diet is a very low carb, high fat diet that shares many similarities with the Atkins and low carb diets. It involves drastically reducing carbohydrate intake and replacing it with fat. This reduction in carbs puts your body into a metabolic state called ketosis. When this happens, your body becomes incredibly efficient at burning fat for energy. It also turns fat into ketones in the liver, which can supply energy for the brain. Ketogenic diets can cause significant reductions in blood sugar and insulin levels. This, along with the increased ketones, has some health benefits.

Ketosis is a metabolic state in which your body uses fat for fuel instead of carbs. It occurs when you significantly reduce your consumption of carbohydrates, limiting your body's supply of glucose (sugar), which is the main source of energy for the cells. Following a ketogenic diet is the most effective way to enter ketosis. Generally, this involves limiting carb consumption to around 20 to 50 grams per day and filling up on fats, such as meat, fish, eggs, nuts, and healthy oils. It's also important to moderate your protein consumption. This is because protein can be converted into glucose if consumed in high amounts, which may slow your transition into ketosis.

Practicing intermittent fasting could also help you enter ketosis faster. There are many different forms of intermittent fasting, but the most common method involves limiting food intake to around 8 hours per day and fasting for the remaining 16 hours.

Blood, urine, and breath tests are available, which can help determine whether you've entered ketosis by measuring the amount of ketones produced by your body. Certain symptoms may also indicate that you've entered ketosis, including increased thirst, dry mouth, frequent urination, and decreased hunger or appetite.

A ketogenic diet is an effective way to lose weight and lower risk factors for disease. In fact, research shows that the ketogenic diet may be as effective for weight loss as a low fat diet. What's more, the diet is so filling that you can lose weight without counting calories or tracking your food intake.

One review of 13 studies found that following a very low carb, ketogenic diet was slightly more effective for long-term weight loss than a low fat diet. People who followed the keto diet lost an average of 2 pounds (0.9 kg) more than the group that followed a low fat diet. What's more, it also led to reductions in diastolic blood pressure and triglyceride levels.

Another study in 34 older adults found that those who followed a ketogenic diet for 8 weeks lost nearly five times as much total body fat as those who followed a low fat diet. The increased ketones, lower blood sugar levels, and improved insulin sensitivity may also play a key role.

Diabetes is characterized by changes in metabolism, high blood sugar, and impaired insulin function. The ketogenic diet can help you lose excess fat, which is closely linked to type 2 diabetes, prediabetes, and metabolic syndrome. One older study found that the ketogenic diet improved insulin sensitivity by a whopping 75%.

A small study in women with type 2 diabetes also found that following a ketogenic diet for 90 days significantly reduced levels of hemoglobin A1C, which is a measure of long-term blood sugar management.

Another study in 349 people with type 2 diabetes found that those who followed a ketogenic diet lost an average of 26.2 pounds (11.9 kg) over a 2-year period. This is an important benefit when considering the link between weight and type 2 diabetes. What's more, they also experienced improved blood sugar management, and the use of certain blood sugar medications decreased among participants throughout the course of the study.

The ketogenic diet actually originated as a tool for treating neurological diseases such as epilepsy.

Studies have now shown that the diet can have benefits for a wide variety of different health conditions:

- Heart disease. The ketogenic diet can help improve risk factors like body fat, HDL (good) cholesterol levels, blood pressure, and blood sugar.
- Cancer. The diet is currently being explored as an additional treatment for cancer, because it may help slow tumor growth.
- Alzheimer's disease. The keto diet may help reduce symptoms of Alzheimer's disease and slow its progression.
- Epilepsy. Research has shown that the ketogenic diet can cause significant reductions in seizures in epileptic children.
- Parkinson's disease. Although more research is needed, one study found that the diet helped improve symptoms of Parkinson's disease.
- Polycystic ovary syndrome. The ketogenic diet can help reduce insulin levels, which may play a key role in polycystic ovary syndrome.
- Brain injuries. Some research suggests that the diet could improve outcomes of traumatic brain injuries.

Foods to avoid

Any food that's high in carbs should be limited.

- Sugary foods: soda, fruit juice, smoothies, cake, ice cream, candy, etc.
- Grains or starches: wheat-based products, rice, pasta, cereal, etc.
- Fruit: all fruit, except small portions of berries like strawberries
- Beans or legumes: peas, kidney beans, lentils, chickpeas, etc.
- Root vegetables and tubers: potatoes, sweet potatoes, carrots, parsnips, etc.
- Low fat or diet products: low fat mayonnaise, salad dressings, and condiments
- Some condiments or sauces: barbecue sauce, honey mustard, teriyaki sauce, ketchup.
- Unhealthy fats: processed vegetable oils, mayonnaise, etc.

- Alcohol: beer, wine, liquor, mixed drinks
- Sugar-free diet foods: sugar-free candies, syrups, puddings, sweeteners, desserts, etc.

Foods to eat

You should base the majority of your meals around these foods:

- Meat: red meat, steak, ham, sausage, bacon, chicken, and turkey
- Fatty fish: salmon, trout, tuna, and mackerel
- Eggs: pastured or omega-3 whole eggs
- Butter and cream: grass-fed butter and heavy cream
- Cheese: unprocessed cheeses like cheddar, goat, cream, blue, or mozzarella
- Nuts and seeds: almonds, walnuts, flaxseeds, pumpkin seeds, chia seeds, etc.
- Healthy oils: extra virgin olive oil, and avocado oil
- Avocados: whole avocados or freshly made guacamole
- Low carb veggies: green veggies, tomatoes, onions, peppers, etc.
- Condiments: salt, pepper, herbs, and spices

It's best to base your diet mostly on whole, single-ingredient foods.

Sample ketogenic diet meal plan for one week:

Monday

breakfast: veggie and egg muffins with tomatoes

lunch: chicken salad with olive oil, feta cheese, olives, and a side salad

dinner: salmon with asparagus cooked in butter

Tuesday

breakfast: egg, tomato, basil, and spinach omelet

lunch: almond milk, peanut butter, spinach, cocoa powder, and stevia milkshake
(more keto smoothies here) with a side of sliced strawberries

dinner: cheese-shell tacos with salsa

Wednesday

breakfast: nut milk chia pudding topped with coconut and blackberries

lunch: avocado shrimp salad

dinner: pork chops with Parmesan cheese, broccoli, and salad

Thursday

breakfast: omelet with avocado, salsa, peppers, onion, and spices

lunch: a handful of nuts and celery sticks with guacamole and salsa

dinner: chicken stuffed with pesto and cream cheese, and a side of grilled zucchini

Friday

breakfast: sugar-free Greek, whole milk yogurt with peanut butter, cocoa powder, and berries

lunch: ground beef lettuce wrap tacos with sliced bell peppers

dinner: loaded cauliflower and mixed veggies

Saturday

breakfast: cream cheese pancakes, blueberries and a side of grilled mushrooms

lunch: Zucchini and beet "noodle" salad

dinner: white fish cooked in olive oil with kale and toasted pine nuts

Sunday

breakfast: fried eggs with and mushrooms
lunch: low carb sesame chicken and broccoli
dinner: spaghetti squash Bolognese

Always try to rotate the vegetables and meat over the long term, as each type provides different nutrients and health benefits.

In case you get hungry between meals, here are some healthy, keto-approved snacks:

- fatty meat or fish
- cheese
- a handful of nuts or seeds
- keto sushi bites
- olives
- one or two hard-boiled or deviled eggs
- keto-friendly snack bars
- 90% dark chocolate
- full-fat Greek yogurt mixed with nut butter and cocoa powder
- bell peppers and guacamole
- strawberries and plain cottage cheese
- celery with salsa and guacamole
- beef jerky
- smaller portions of leftover meals
- fat bombs

Although getting started on the ketogenic diet can be challenging, there are several tips and tricks that you can use to make it easier.

- Start by familiarizing yourself with food labels and checking the grams of fat, carbs, and fiber to determine how your favorite foods can fit into your diet.
- Planning out your meals in advance may also be beneficial and can help you save extra time throughout the week.
- Many websites, food blogs, apps, and cookbooks also offer keto-friendly recipes and meal ideas that you can use to build your own custom menu.
- Alternatively, some meal delivery services even offer keto-friendly options for a quick and convenient way to enjoy keto meals at home.
- Look into healthy frozen keto meals when you're short on time
- When going to social gatherings or visiting family and friends, you may also want to consider bringing your own food, which can make it much easier to curb cravings and stick to your meal plan.

Many restaurant meals can be made keto-friendly.

Most restaurants offer some kind of meat or fish-based dish. Order this and replace any high carb food with extra vegetables.

Egg-based meals are also a great option, such as an omelet or eggs and bacon.

Another favorite is bun-less burgers. You could also swap the fries for vegetables instead. Add extra avocado, cheese, bacon, or eggs.

At Mexican restaurants, you can enjoy any type of meat with extra cheese, guacamole, salsa, and sour cream.

For dessert, ask for a mixed cheese board or berries with cream.

Although the ketogenic diet is usually safe for most healthy people, there may be some initial side effects while your body adapts.

There's some anecdotal evidence of these effects often referred to as the keto flu. Based on reports from some on the eating plan, it's usually over within a few days.

Reported keto flu symptoms include diarrhea, constipation, and vomiting. Other less common symptoms include:

- poor energy and mental function
- increased hunger
- sleep issues
- nausea
- digestive discomfort
- decreased exercise performance

To minimize this, you can try a regular low carb diet for the first few weeks. This may teach your body to burn more fat before you completely eliminate carbs.

A ketogenic diet can also change the water and mineral balance of your body, so adding extra salt to your meals or taking mineral supplements may help. Talk to your doctor about your nutritional needs.

At least in the beginning, it's important to eat until you're full and avoid restricting calories too much. Usually, a ketogenic diet causes weight loss without intentional calorie restriction.

Staying on the keto diet in the long term may have some negative effects, including risks of the following:

- low protein in the blood
- extra fat in the liver
- kidney stones
- micronutrient deficiencies

A type of medication called sodium-glucose cotransporter 2 (SGLT2) inhibitors for type 2 diabetes can increase the risk for diabetic ketoacidosis, a dangerous condition that increases blood acidity. Anyone taking this medication should avoid the keto diet.

More research is being done to determine the safety of the keto diet in the long term. Keep your doctor informed of your eating plan to guide your choices.

Although no supplements are required, some can be useful.

- MCT oil. Added to drinks or yogurt, MCT oil provides energy and helps increase ketone levels.
- Minerals. Added salt and other minerals can be important when starting out due to shifts in water and mineral balance.
- Caffeine. Caffeine can have benefits for energy, fat loss, and performance.
- Exogenous ketones. This supplement may help raise the body's ketone levels.
- Creatine. Creatine provides numerous benefits for health and performance. This can help if you are combining a ketogenic diet with exercise.
- Protein powder (whey, pea, etc.) Use half a scoop of protein in shakes or yogurt to increase your daily protein intake.

Frequently asked questions

1. Can I ever eat carbs again?

Yes. However, it's important to significantly reduce your carb intake initially. After the first 2 to 3 months, you can eat carbs on special occasions — just return to the diet immediately after.

2. Will I lose muscle?

There's a risk of losing some muscle on any diet. However, protein intake and high ketone levels may help minimize muscle loss, especially if you lift weights.

3. Can I build muscle on a ketogenic diet?

Yes, but it may not work as well as on a moderate carb diet.

4. How much protein can I eat?

Protein should be moderate, as a very high intake can spike insulin levels and lower ketones. Around 35% of total calorie intake is probably the upper limit.

5. What if I am constantly tired, weak, or fatigued?

You may not be in full ketosis or be utilizing fats and ketones efficiently. To counter this, lower your carb intake and revisit the points above. A supplement like MCT oil or ketones may also help.

6. My urine smells fruity. Why is this?

Don't be alarmed. This is simply due to the excretion of by-products created during ketosis.

7. My breath smells. What can I do?

This is a common side effect. Try drinking naturally flavored water or chewing sugar-free gum.

8. I heard ketosis was extremely dangerous. Is this true?

People often confuse ketosis with ketoacidosis. Ketoacidosis is dangerous, but the ketosis on a ketogenic diet is usually fine for healthy people. Speak to your doctor before starting any new diet.

9. I have digestion issues and diarrhea. What can I do?

This common side effect usually passes after 3 to 4 weeks. If it persists, try eating more high fiber veggies.

The bottom line

A ketogenic diet can be great for people who:

- are overweight
- have diabetes
- are looking to improve their metabolic health

It may be less suitable for elite athletes or those wishing to add large amounts of muscle or weight.

It may also not be sustainable for some people's lifestyles and preferences. Speak with your doctor about your eating plan and goals to decide if a keto eating plan right for you.