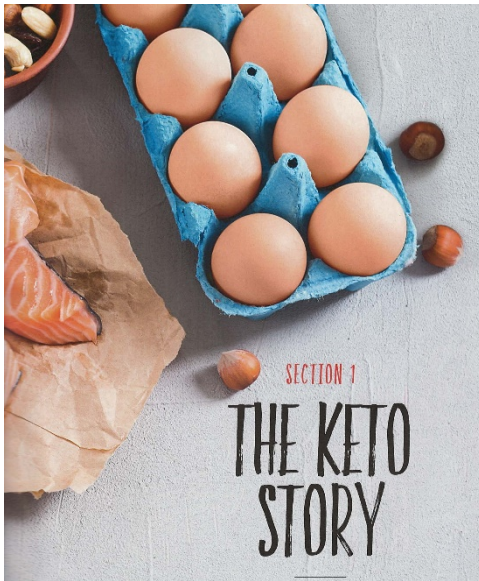


What is the Keto Phenomenon, and Why is it So Popular?

First, while the word diet suggests weight loss, there are so many other possible benefits of keto that it might be better to think of it as an eating plan. A meta-analysis of 13 studies in the *British Journal of Nutrition* found that a keto diet lowered blood pressure and triglycerides while increasing “good” HDL cholesterol. Other studies have suggested keto benefits for brain function, insulin and blood glucose control; reducing conditions like acne and migraines; and even possibly an ability to fight cancer.

A Dietary U-Turn



Not very long ago, the opposite of keto—a low-fat, higher-carb diet was being extolled as the safest, healthiest life-extending plan. For decades, we were told that fat is detrimental to our health. Meanwhile, low-fat “diet” products, many of them full of sugar flooded supermarket shelves. What happened then was that obesity rates tripled over just one generation and the rates of diabetes skyrocketed. Why did this happen, even while the U.S. government’s dietary recommendations advised people to embrace carbs and avoid fats? It’s not complicated. In hindsight, the problem was clear—If you eat a lot less fat, you will eat more carbohydrates. That makes your blood sugar go up, along with the fat-storing hormone insulin. Together, these induce a blood-sugar roller coaster where you feel hungry soon after your blood sugar spikes, so

you consume more carbs and go through the whole process again. Meanwhile, insulin cues your body to store those calories as fat. And when your pancreas can no longer produce enough insulin to bring down blood-sugar levels, you can develop type 2 diabetes.

If you eat more fat, on the other hand, the opposite happens: Blood sugar stabilizes and you feel satiated for much longer after eating. That’s where keto comes in. In Sweden, a low-carb, high-fat diet—essentially, the keto model became widely popular around 2008, after government scientists announced that it was scientifically proven to work and appeared safe. Sweden’s growing obesity rates leveled off, and in the past decade, heart disease declined in proportion to the increase in butter consumption. It works, but how?

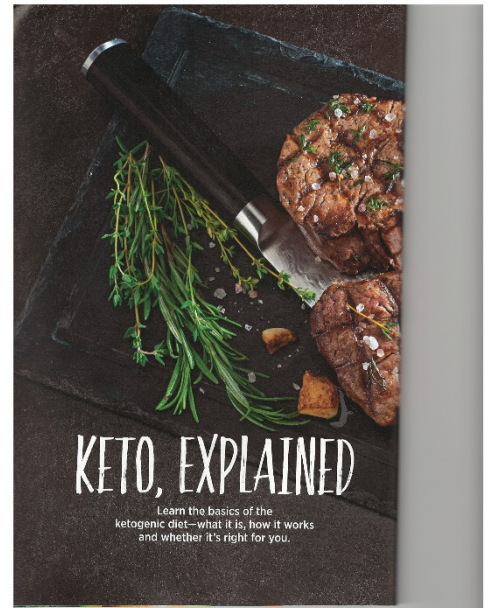
The Diets Inner Workings

Glucose is the go-to energy source for your body, including your muscles, organs and brain. It’s easily broken down, largely from carbohydrates that are released into the blood, then gobbled up as “food.” When you deprive your body of carbohydrates, though—on keto, you usually eat fewer than 50 grams per day, or about the amount in an English muffin plus an apple—a backup plan kicks in. If we didn’t have that, the human race would have disappeared a long time ago. What happens is that your liver starts breaking down fats to make them into

an alternative form of fuel called ketone bodies, which can be used in place of glucose. This process is called ketosis. Ketones are especially critical for the brain, a greedy organ that consumes about 20 percent of the body's calories per day, even though it accounts for only 2 percent of the body's mass. Most of your body, including your muscles can run directly on fat, but the brain can only refuel only on glucose or ketones. Some types of ketones may be even more efficient as fuel than glucose because a ketogenic diet increases the number of mitochondria which generate energy within cells. This may account for the feelings of vigor and mental clarity that some keto followers describe, as well as a more robust metabolism. A 2018 study in the journal *BMJ* showed that dieters on a very low-carb regimen had an increased energy expenditure—aka a faster metabolism—than those following higher-carb plans.

At the same time, when your body is using fat and ketones as fuel in place of glucose, your level of insulin falls, it's not being called into action to regulate your blood sugar, because you're not going through the constant carb-fueled rise and fall.

Insulin is engineered to store fat, so when it goes down, your fat burning goes up. This is great if you're trying to lose weight, but there are also other, less obvious benefits, like less hunger and a steady supply of energy. A large meta-analysis of 17 different studies that compared low-carb diets to low-fat ones has shown that the low-carb dieters lost significantly more weight—and, as a bonus, had a lower risk of cardiovascular disease



[Keto in Real Life](#)

So how do you get to ketosis? The standard keto plan calls for keeping carb intake to 5 to 10 percent of calories (between 20 and 50 grams per day), raising fat intake to 75 percent, and taking in 15 to 20 percent in protein is that your body can convert any excess protein to sugar in the blood. Most plans don't call for calorie counting., just for adjusting your diet composition—a plus for many dieters weary of calculating every bite.

There are plenty of other reasons for keto's popularity. Most people see weight-loss results quickly, which is very motivating. Other diets may give similar results but in six months rather than three. And people love structure—being told exactly what's okay to eat and what's not. There are also subtle psychological advantages. Many fatty foods are very tasty and things that people want to eat, like steak and cheese, so you don't feel like you're "missing out" when you're doing keto. At the same time, you're having to really notice what you're eating in order to avoid carbs, and anytime you're paying close attention to what you're taking in, it changes your eating habits and you tend to eat less.

Keto and the Microbiome

We don't yet know the impact of keto on the microbiome, the world of bacteria that lives in your digestive system and has all kinds of effects on your general health. The microbiome really likes fiber and other things that are in healthy carbohydrate foods, and if you're not careful, your fiber intake on keto can go down. That's why many keto dieters decide to take probiotics supplements to make sure their microbiome stays in balance. Lactobacillus, Bifidobacterium, Streptococcus Thermophilus, Bulgaricus, Propionibacterium and Lactococcus. the most clinically studies probiotic strain, which has been shown to support your digestive system and overall immune health. Add fiber to your diet in a keto-friendly way with psyllium husk or ground flaxseed, you can use them in recipes or take them in pill form. They can also help with digestive issues such as constipation.

Fruits and vegetables also have many important plant nutrients like flavonoids and antioxidants. Since some of these (for example, most fruit and starchy veggies like sweet potatoes and beets) aren't allowed on keto, make sure your vegetables choices are filled with nutrients, including cruciferous vegetables like Brussels sprouts, broccoli, cauliflower and bok choy. A high quality (GMP certified) can also help you cover your micronutrient bases.

Another way to look at keto is as a great jump-start for losing weight, gaining energy and staving off cardiovascular disease and diabetes.



The Health Payoff

Sustained Weight Loss/Tackles Belly Fat,

High Blood Pressure,

Metabolic Syndrome and Type 2 Diabetes,

Heart Disease,

Cancer,

Cognitive Health,

Polycystic Ovarian Disease,



Sustained Weight Loss/Tackles Stubborn Belly Fat

Weight loss grabs most of the attention when it comes to keto benefits, but research is showing a surprising number of other boosts to your overall wellness. These are just a few of the less obvious reasons for trying a keto diet. Keto helps most people lose weight, often without feeling hungry or deprived. The Harvard School of Public Health has posited several mechanisms for the weight loss, including the satiating effect of consuming large amounts of fat; a decrease in appetite-stimulating hormones, like insulin and ghrelin; and a faster metabolism from the work of breaking down fats into a fuel source. That's beginning to look like the tip of the iceberg, though as doctors and researchers sit up and take notice of the other ways a ketogenic lifestyle may promote health. So far, evidence is pointing to keto's impact on the following issues and ailments.



High Blood Pressure

Hypertension is the second biggest known global risk factor for disease after poor diet; perhaps lifestyle interventions are underutilized? In a previous small pilot study, it was found that a low carbohydrate diet, ketogenic, was associated with significant improvements in blood pressure, weight, 'deprescribing' of medications and lipid profiles. The study, published in the *Archives of Internal Medicine*, 146 obese or overweight adults were randomly divided into two groups. Many of the participants also had chronic health problems, such as high blood pressure or diabetes. The first group was advised to follow a low-carbohydrate, ketogenic diet consisting of less than 20 grams of carbohydrates per day, and the second group received the weight loss drug orlistat three times a day, plus counseling in following a low-fat diet (less than 30% of daily calories from fat) at group meetings over 48 weeks. The results showed weight loss was similar in the two groups. The low-carb diet group lost an average of 9.5% of their body weight.

Metabolic Syndrome and Type 2 Diabetes



Both related conditions have been surging in the United States, and they appear to be countered by keto. Metabolic Syndrome (METS) is a cluster of symptoms, including abdominal fat, high blood pressure, high cholesterol and insulin resistance or high blood sugar. It is considered a precursor to type 2 diabetes and increases your risk of heart disease and stroke. A growing number of studies has shown that keto can have a profound effect on both MetS and diabetes by replacing glucose with ketones as a fuel source. Thus, insulin release slows and blood sugar levels normalize.

A study in 2017 found that people with MetS who were put on a keto diet for 10 weeks experienced significant weight loss and an improvement in their body-fat percentage and blood sugar numbers. When it comes to diabetes, a 2020 study showed that adults with diabetes reduced their carbohydrate

intake from 250 to 100 grams per day, they lost weight and their blood sugar levels stabilized. Often people get so much better they can stop taking their diabetes medications.

Heart Disease

While the cause-and-effect line from keto to cardiovascular health has not been established by long-term human studies, there's a wealth of evidence that a ketogenic diet can improve many risk factors for heart disease. Researchers have looked at 30 different markers for heart risk, and except for a slight uptick in LDL cholesterol on some people, all of them improved. That includes glucose blood levels, triglycerides, blood pressure and HDL cholesterol. It can be hard to tell whether some of those results are simply from the weight loss, but from other factors. If people drop extra weight and improve in so many other factors—well, at the very least, it's neutral. And if your risk factors are trending in the right direction, you're likely to be lowering your chance of cardiovascular disease.

Cancer

Most cancer cells rely on glucose as fuel, which is why keto diets may help prevent and fight the disease. The research about keto having an impact on cancer is in its early stages—but it's intriguing. The new class of cancer drugs often lead to high levels blood sugar, and per a 2018 study in mice, a ketogenic diet counteracts that effect and makes the therapy more effective. A ketogenic diet can lower blood sugar levels. This may help reduce tumor growth and even starve cancer cells of energy. Another study in mice with malignant gliomas (tumors) found that the animals who underwent radiation while they were being fed a keto diet lived much longer, most of them with no signs of tumor recurrence, compared to mice that received radiation on a standard diet. Now they're lining up studies in humans, to see whether keto enhances chemotherapy. There's really zero evidence in humans yet that keto itself is protective against cancer, but there's a lot of excitement about the mouse studies. Beyond lowering blood sugar, a ketogenic diet may also help treat cancer via other channels, such as lowering calories, reducing insulin and increasing ketones. There's a lot of anecdotal evidence around people having a cancer diagnosis and then following a ketogenic diet. It depends partly on where you are in your treatment.



Cognitive Health

The brain is the body's fattiest organ, comprised of 60% fat, and studies have suggested that a high-fat keto diet offers neuroprotective benefits. In fact, the earliest and strongest evidence in keto research emerged nearly a century ago, when it was found that a ketogenic diet reduced brain seizures in children with epilepsy. A 2020 study in the journal *Neurobiology of Aging* showed that older adults with mild cognitive impairment who were put on a ketogenic diet experienced better memory function after just six weeks. (As a bonus, the subjects also showed reductions in glucose, insulin, weight and waist circumference, all of which are health-promoting changes.) Some researchers have surmised that ketones may be a more efficient and "clean burning" fuel source than glucose, providing more energy per unit of oxygen used,



A ketogenic diet increases the number of mitochondria, the so-called "energy factories" in brain cells. A 2019 study in rats on a keto diet showed genetic changes in their brains that prompted an increase in energy metabolism in the hippocampus—the part of the brain that's key to learning and memory. Another study, from the University of California at San Francisco, also using rats showed that a ketogenic diet reduced inflammation in the brain, which can cause damage to neural circuits and increase your risk of dementia as you age. Yet another connection between keto and brain health: researchers know that diabetes increases your chance of getting Alzheimer's, the most common form of dementia. But they've now begun to talk about another form of diabetes: type 3 diabetes, which is strongly associated with Alzheimer's disease. So, if keto improves your glucose profile and reduces your chances of diabetes, it may be protecting your brain as well.

Polycystic Ovarian Disease

The evidence about keto and Polycystic Ovarian Syndrome (PCOS) is also preliminary but promising. PCOS is an endocrine disorder that causes enlarged cysts. It has been shown that a high-carbohydrate diet can negatively affect women with PCOS and that the condition can put them at risk for diabetes and obesity. A small pilot study found that overweight women with PCOS who limited their carbohydrate intake to less than 20 grams a day for six months showed reductions in weight and insulin as well as levels of the hormones testosterone, LH and FSH, which may be factors in PCOS.

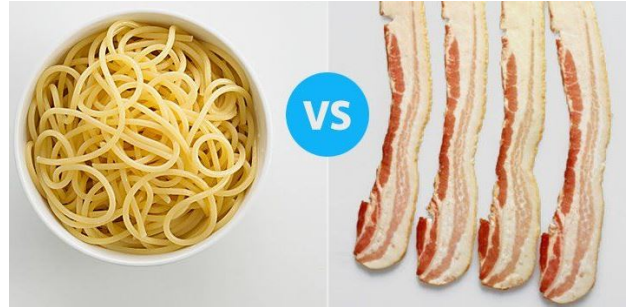
Experts agree that more research is needed, but some doctors now suggest keto to patients as an adjunct therapy—partly because the diet helps with inflammation and insulin resistance, both of which play a large role in PCOS.

Fats vs. Carbohydrates

Keto has flipped the script on both nutrients.

Now science is showing why we should favor one over the other –and which choices are healthiest.

The low-fat diet movement in the United States is so long-running—beginning in the 1970s with dietary guidelines issued by the American Heart Association and later adopted by the USDA (U.S. Department of Agriculture)—that many people are still shocked when they hear how much fat they can eat on keto. For decades, we’ve been taught that “low fat” means “healthy,” and that high-fat diets lead to obesity, heart disease and cancer. But science doesn’t play favorites, and loads of research has increasingly shown that we should be eating drastically fewer carbs, and considerably more fats, while keeping protein intake in the moderate range.



Many experts now feel that the obesity epidemic of the past few decades, as well as the meteoric rise in cases of type 2 diabetes, may in fact be a consequence of the low-fat trend. If you bring fat intake down, carbohydrate consumption will rise (there’s only so much protein anyone can eat). Food manufacturers jumped on the low-fat bandwagon and started creating processed foods that replaced fats with carbohydrates, driving carbohydrate intake to new highs. The result: insulin resistance, diabetes and weight gain. It’s possible to think of the low-fat, near vegetarian diet of the past half-century as an uncontrolled experiment on the entire American population. In 1961, roughly one in seven adult Americans was obese. Forty years later, that number was one in three. Once you understand how these two macronutrients work, those stats are less surprising. Here is what the researchers now know about fats, carbohydrates and health.

The Return of Fats



Everyone remembers the days of low-fat margarine, nonfat sour cream and reduced-fat cheeses and peanut butter; in fact, many of those products are still on the market. Meanwhile, though science has been overturning the low-fat apple cart. A large study in the journal *Lancet* in 2015 summarized all major low-fat weight-loss trials to date and found no evidence that eating low-fat helps people lose weight, compared to any other diet.

At the same time, more research is showing that the opposite premise is true; that low-carb, high-fat regimens are more effective. Three large meta-analyses, which look at evidence from many studies, all in respected and peer-reviewed journals, found that low-carb diets consistently conveyed more benefits than low-fat. A 2015 study in PLOS ONE, after noting that

a “low-fat” diet is currently the recommended diet for overweight and obese adults, showed that low-carb diets outpaced low-fat plans both in and gains in cardiovascular health. And the definition of “low-carb” in these studies was less than 120 grams of carbohydrates a day, while strict keto calls for only 20 grams –so the benefits of keto could be even more powerful.

Which Fats?



Once you’ve decided to try a high-fat keto plan, that’s the next question—and it’s another area where there has been controversy. (Later in this paper we will discuss many foods that are beneficial and which ones are harmful and not allowed on keto.) In the decades when fat in general was decried as a health danger, one form of it was considered the greatest evil: saturated fat, which is derived mainly from animal sources and is solid at room temperature. But research, again paints a different picture.

In the past decade, numerous studies have found no clear evidence of a causal link between saturated fat in the diet and heart disease, and therefore no reason to lower intake of it to under 6 percent, as the American Heart Association suggests. That’s not to say that saturated fat is superior, experts add, but that it is likely a neutral in terms of health. A group of researchers suggested in a 2019 article in the journal *BMJ* that current recommendations by the World Health Organization to reduce saturated fat “fail to consider considerable evidence that the health effects of saturated fat varies, depending on the specific food source.”

If you are getting saturated fat from whole-food sources like eggs, dairy and grass-fed beef, alongside healthy fats like olive oil and omega-3s from fatty fish, you should be fine. Saturated fat got such a bad reputation because most studies were observational, and there were so many confounding variables, things like people smoking or not exercising. Then when further, clinical studies came out, they showed that saturated fat is not really a strong factor. Even the Academy of Nutrition and Dietetics is now urging the USDA, in its next edition of nutritional guidelines for Americans to de-emphasize saturated fat as a nutrient of concern. In fact, the Academy explicitly stated in its letter to the USDA, “carbohydrate intake conveys a greater amount of cardiovascular disease risk than does saturated fat.”

Unsaturated fats, on the other hand, have long been healthy include fats in olives, avocados and many nuts, as well as omega-3 fatty acids found in fish, flaxseed and chia seeds. These are good for your heart, anti-inflammatory and may protect against cancer and neurodegenerative disease.



The Fall of Carbohydrates

Meanwhile, carbohydrates that once dominated the base of the USDA food pyramid—grains, breads, cereals, rice, pasta—are now on many people’s “out” list. How did they go from being lauded to avoided? It’s a mirror image of saturated fats. Carbohydrates were long seen as a healthy source of calories, with the added benefit (at least with whole grains) of containing fiber. The low-fat movement pushed carbs into the spotlight, and many people felt that eating a bagel was healthier than eating a steak. Then researchers dove deeper into the distinctions between highly processed carbs foods (white bread, sugary cereals, sweets) and whole-food forms of carbs (fruits and vegetables are mostly carbohydrates)



What studies found was that processed carbohydrates break down very quickly in the body, causing a blood-sugar spike followed by an insulin spike. Insulin is efficient at storing calories as fat, so many sweets end up going straight into storage. Then you’re hungry all over again, setting up a boomerang effect—plus you’re gaining weight. Complex carbohydrates from whole foods like broccoli or spinach, on the other hand, not only offer more nutrients for your body to use

than a starchy carb item, but their fiber ensures that they break down slowly. They also simply contain fewer grams of carbohydrates—and much less sugar—so insulin doesn’t have to come flooding in to lower blood sugar levels

Choosing Your Carbohydrates

The top-line message of keto is to realign your body’s energy systems by greatly reducing carbohydrate intake—down to almost 10 percent, if not 5 percent, of calories.



But the secondary message is subtler: Not all carbohydrates are bad, and you benefit from the nutrients in produce like cabbage and lettuce. The trick is both cutting carbs, and being discriminating about those you do eat. One easy way to choose carbohydrates is to look at where they grow. Vegetables that grow above the ground—things like lettuce, asparagus, cucumber, cauliflower, spinach and eggplant—tend to be lower in carbohydrates and are best for keto. Below- ground vegetables, like white and sweet potatoes, beets, carrots and parsnips are higher in carbs and should be avoided on a keto diet. For example, 100 grams of asparagus have 2 net carbs, while 100 grams of sweet potato have 17 grams, almost the daily total you’re allowed on a strict keto plan. The great thing about above-ground vegetables is that you can eat them almost without counting. It’s hard to overeat spinach, zucchini, lettuce, asparagus and kale on a keto diet.

Pump Up Your Progress

Keto is known for quick results, but There Are Ways to Speed Up Your Gains—and Your Weight Loss—Even More

The moment you decide to commit to a new healthy lifestyle, it's only human to want to see benefits pronto. And luckily, one of keto's claims to fame is how quickly the diet registers, in the form of markers like lower blood pressure, quick weight loss, improved blood sugar levels and more. If you're really chomping at the bit, though you can experiment with some tweaks and shortcuts to your regimen from day One. To be clear: These aren't ways to get around the basic premise of a ketogenic program. You'll still need to follow all the macronutrient rules and guidelines. But these tricks can jump-start the process of getting into ketosis, which is where the magic begins.

Supplement With MCT Oil and Exogenous Ketones



MCT stands for medium-chain triglycerides—a type of fat found in coconut oil, palm oil and some dairy—that may have special benefits on keto. Unlike most fats, MCTs are rapidly absorbed and taken directly to the liver, where they can be used immediately for energy or converted into ketones. But while, say coconut oil comprises about 50 percent of these fats, MCT oil is extracted from various oils to produce a 100 percent MCT product. A study in the *European Journal of Clinical Nutrition* showed that MCT oil can raise levels of two hormones that promote the feeling of fullness in the body, peptide YY and leptin. (However, other studies have shown opposite effects, such as increasing hunger hormones like Ghrelin and Neuropeptide Y.) Other studies have shown that MCT oil can speed weight loss. Bottom line; MCT oil may be helpful if it replaces some of the other oils in your diet.

Exogenous ketones are a bit more controversial. They're supplements made mostly with BHB ketones, the most abundant type of ketone in the body. A study in *Nutrition and Metabolism* found that “exogenous ketone supplementation caused a rapid and sustained elevation of BHB and a reduction of glucose” in rats. But there is also evidence that while your ketone levels may go up, your body may not truly be in “nutritional ketosis” and actively burning fat in place of glucose. **What to Do?** Feel free to try either of these, but don't assume they'll make up for any lapses. They're supplements to your keto plan, not substitutions.

Make Coconut Oil a Go

There are several oils that are especially good on a keto diet, but consider putting coconut oil at the front of your cupboard because of its high levels of medium-chain triglycerides (MCTs). The dominant form of MCTs in coconut is lauric acid, which some studies, including one in the *Journal of Oleo Science*, show can help to stimulate ketone body production. That study

concluded that “coconut oil intake may improve brain health by directly activating ketogenesis in astrocytes and thereby by providing fuel to neighboring neurons,” which is of interest to scientists studying brain disease. It has even been suggested that consuming coconut oil may be one of the best ways to increase ketone levels in people with Alzheimer’s disease and other nervous disorders—and ketones may be better and more efficient “brain food” than glucose.



Beyond brain health, ketogenesis is of course the holy grail of keto diets in general, because it means your body is switching over from burning glucose to burning fat and ketones—leading to the other benefits of keto: weight loss, anti-inflammation and better insulin regulation, among others. Some studies have even shown that following a high MCT-oil diet, while eating 20 percent of calories from carbohydrates produces effects like the classic ketogenic diet, which is limited to 5 percent of calories from carbohydrates—so imagine how supercharged your keto can be if you stick to 5 percent carbs and use coconut oil more often in place of other oils. It has a slightly sweet flavor that’s great in baked goods like keto desserts or breads: it also lends itself well to recipes with Asian flavors (like Thai or Vietnamese dishes and curries). **What to Do?** Start by adding between a teaspoon to a tablespoon of coconut oil to your morning coffee, then work it into recipes. Always look for organic and extra-virgin coconut oils. Never purchase coconut oil that has been refined.

Side-Effect City

You’ve heard the stories. Constipation, bad breath, “keto flu.” Tales abound about the woes of starting keto—but there are ways you can fight back.



For most people, keto is a jolt to the system. That’s because the Standard American Diet (SAD), relies heavily on carbohydrates of all kinds—from bread and pizza to hidden carbs in “healthy” foods, like granola and low-calorie frozen entrees. So, it’s often a big change to switch to a high-fat, very low-carb plan, especially if you had been getting the bulk of your fiber from grains, which are outlawed on keto. Often, the side effects are short-term as your body adjusts to an entirely different system. But while they’re happening, they’re no fun. It’s important, if you’ve never been on a ketogenic diet, to talk to a health care professional knowledgeable in nutrition and keto. Plan to start a diet when you don’t have a lot of social events and can be relatively low-activity.

Keto Flu; Don't push yourself the first few days. You'll have plenty of time later to do workout. For now, your body is adjusting. Drink lots of fluids and work to get enough vitamins from fresh vegetable, especially high-potassium leafy greens. After a few days, your body should adapt so you feel more energetic, although for some people it will take longer.

Digestive Issues; With constipation and diarrhea hydration is essential. Make sure you're drinking a lot of water and concentrate on adding keto-friendly sources of fiber to your daily meals. Some examples are chia seeds, flaxseed, nuts and seeds, all of which can help with regulating your system. Some people opt to take a gentle fiber supplement when beginning keto, to help the body adjust. Others have found relief by drinking a mixture of hot water with lemon, along with a teaspoon of apple cider vinegar, every morning, which can help boost digestive function.

Muscle Cramps; When you're in the early days of keto, you may suddenly find yourself experiencing cramps—that sudden and painful knotting of your muscles, often at night or first thing in the morning. This usually is caused by a mineral imbalance as you adjust to keto, as well as by dehydration. Minerals like sodium, potassium and magnesium, known as electrolytes, are key to regulating nerve and muscle function and maintaining blood acidity: It's all a delicate balance that starts with making sure you're getting enough water. Carbohydrates hold on to water in the cells, so when you withdraw most of the carbs that your body is accustomed to, you can also get low on the minerals in that water. The result? Cramps.



Bad Breath; While you're dealing with "keto breath" you may be tempted to use sugar-free mints or gum, but these are often not carb-free and may interfere with ketosis. Instead, your best bet is old-fashioned remedies, like being vigilant about flossing and brushing and, especially making sure to drink enough water. Dehydration is a major cause of bad breath, and you're just beginning keto you may be more prone to dehydration in general.

Headaches; For a run-of-the-mill headache, drinking more water and making sure you're getting enough potassium and sodium may be the answer. That could be as easy as sprinkling a bit a light salt (a high-potassium salt substitute) on your food. If you're afflicted with migraines, consult your health care professional.

Fiber Fix

Americans have been hearing the message from public-health experts for a long time: eat more fiber! That's because this no digestible element in plant foods has been linked to many health benefits, including better blood-sugar control, heart health, lower cancer risk, better digestion, weight management and even longevity. But the list of top fiber foods—lentils, barley, wheat bran, brown rice, potatoes—reads like an "anti-keto" diet, full of high-carb fruits, grains and



vegetables. Keto favorites like meat and high-fat dairy are devoid of fiber, which is why one of the common side effects of a keto diet is constipation.

In a perfect world, there would be a way to combine the health benefits of fiber with those of keto. Researchers at Jacksonville University ran a clinical study that provided women ranging in age from 25 to 60 with a fiber-conscious keto diet for 22 days. After just three weeks, the study revealed astonishing results. The women had benefits to their bodies, their skin, their minds and their hormones. The program had metabolism-optimizing powers.

• **How to Know You're in Ketosis**

How do you know if you're in ketosis? It's possible to measure it by testing urine, blood or breath samples. But there are also telltale symptoms that require no testing:

- **Dry mouth and increased thirst.** Unless you drink enough water and get enough electrolytes like sodium, you may feel a dry mouth. Try a cup of bouillon or two daily, plus as much water as you need. You may also feel a metallic taste in your mouth.

Increased urination. A ketone body, acetoacetate, may end up in the urine. This makes it possible to test for ketosis using urine strips. It also – at least when starting out – can result in having to go to the bathroom more often. This may be the main cause of the increased thirst (above).

- **Keto breath.** This is due to a ketone body called acetone escaping via our breath.

It can make a person's breath smell "fruity," or like nail polish remover. This smell can sometimes also come from sweat, when working out. It's often temporary. Learn more

Other, less specific but more positive signs include:

- **Reduced hunger.** Many people experience a marked reduction in hunger on a keto diet.

In fact, many people feel great when they eat just once or twice a day, and may automatically end up doing a form of intermittent fasting. This saves time and money, while also speeding up weight loss.

What to Eat on a Keto Diet?

Here are typical foods to enjoy on a ketogenic diet. The numbers are net carbs per 100 grams (3.5 ounces) of food. To remain in ketosis, lower is generally better:

A healthy keto diet is built on whole, nutrient-dense foods, such as meat, fish, eggs, and non-starchy vegetables, along with natural fats like butter or olive oil. Use the food lists below to choose foods that keep you at less than 20 grams of net carbs per day (total carbs minus fiber).



Meat, Poultry, Fish and Substitutes

- **Fish.** Preferably eating anything that is caught wild like catfish, cod, flounder, halibut, mackerel, mahi-mahi, salmon, snapper, trout, and tuna. Fattier fish is better.
- **Shellfish.** Clams, oysters, lobster, crab, scallops, mussels, and squid.
- **Whole Eggs.** Try to get them free-range from the local market if possible. You can prepare them in many ways like fried, deviled, boiled, poached, and scrambled.
- **Beef.** Ground beef, steak, roasts, and stew meat. Stick with fattier cuts where possible.

- **Pork.** Ground pork, pork loin, pork chops, tenderloin, and ham. Watch out for added sugars and try to stick with fattier cuts.
- **Poultry.** Chicken, duck, quail, pheasant and other wild game.
- **Offal/Organ.** Heart, liver, kidney, and tongue. Offal is one of the best sources of vitamins/nutrients.
- **Other Meat.** Veal, Goat, Lamb, Turkey and other wild game. Stick with fattier cuts where possible.
- **Bacon and Sausage.** Check labels for anything cured in sugar, or if it contains extra fillers. Don't be overly concerned with nitrates.



Top 10 Keto Vegetables

The numbers are net carbs per 100 grams (3.5 ounces) of food.



1. **Cauliflower** – 3 g. Mild flavor and so versatile. Use it as base of staples like cauliflower rice and cauliflower mash.
2. **Avocado** – 2 g. Technically a fruit, but loaded with nutrients and healthy fat. Great sliced, mashed as guacamole, or even baked.
3. **Broccoli** – 4 g. Swap it for pasta, rice or potatoes. It can be steamed, fried in butter, drizzled in cheese sauce, roasted with bacon, baked au gratin and more
4. **Cabbage** – 3 g. Delicious when sautéed in butter or used in our popular Asian cabbage stir fry.
5. **Zucchini** – 3 g. Miss potatoes? Try zucchini fries or zucchini chips. Zucchini can also be spiralized to make keto pasta, like in this keto carbonara. More recipes
6. **Spinach** – 1 g. Extremely low in carbs, it can be used raw in salads, baked into chips, sautéed, or creamed
7. **Asparagus** – 2 g. Filling, highly nutritious, and very low carb, asparagus was made for a high-fat sauce such as hollandaise or béarnaise.

8. **Kale** – 3 g. Although slightly higher carb than spinach, kale is a flavorful veggie. Enjoy it raw in salads, bake into chips, sauté in lard, or use as a base instead of pasta
9. **Green beans** – 4 g. Green beans can be roasted, steamed, or stewed, but may taste even better cooked in bacon fat or butter
10. **Brussels sprouts** – 5 g. Baby cabbages are excellent roasted until crispy or served in a creamy sauce.

Top 10 Keto Fruits

The numbers are net carbs per 100 grams (3.5 ounces) of food.



1. **Raspberries:** Half a cup (60 grams) contains **3** grams of carbs.
2. **Blackberries:** Half a cup (70 grams) contains **4** grams of carbs.
3. **Strawberries:** Eight medium-sized (100 grams) contain **6** grams of carbs.
4. **Plum:** One medium-sized (65 grams) contains **7** grams of carbs.
5. **Kiwi:** One medium-sized (70 grams), contains **8** grams of carbs.
6. **Cherries:** Half a cup (75 grams) contains **8** grams of carbs.
7. **Blueberries:** Half a cup (75 grams) contains **9** grams of carbs.
8. **Clementine:** One medium-sized (75 grams) contains **9** grams of carbs.
9. **Cantaloupe:** One cup (160 grams) contains **11** grams of carbs.
10. **Peach:** One medium-sized (150 grams) contains **13** grams of carbs.

Top 10 Keto Nuts

The numbers are net carbs per 100 grams (3.5 ounces) of food.

A rough guide is that 100 grams of nuts is about three handfuls — but hands come in different sizes.



- 65 pecan halves
- 20 Brazil nuts
- 40 macadamias
- 70 hazelnuts
- 25 walnuts or 50 walnut halves
- 2/3 cup of peanuts
- 80 almonds
- 3/4 cup of pistachios
- 3/4 cup of pine nuts
- 60 cashews

Keto Dairy

Visual guide

The graphic below shows how many carbs different dairy products contain. The numbers are per 100 grams (3.5 ounces) of each food, except where noted. ① ②



Lowest carb: (0-3 grams per 100 g/3.5 ounces)

- **Butter and ghee:** Butter is made from milk fat and contains only trace amounts of lactose (sugar) and whey (protein). [Ghee](#), also known as clarified butter, has had all lactose and whey removed. Butter has only 0.1 gram of carb and 0.1 gram of protein per 100 grams. So, like ghee, it's essentially carb-free.
- **Soft-ripened cheese:** Velvety Brie, Camembert, and similar soft-ripened cheeses are among the lowest in carbs of all cheeses, with only 0.5 gram of carb per 100 grams.
- **Hard (aged) cheese:** Rich in flavor, hard cheeses like cheddar, Swiss, and provolone contain very little lactose. They're extremely keto-friendly; most provide about 1 gram of carb per 100 grams, although some may contain up to 3 grams.
- **Semi-soft cheese:** Midway between hard and soft cheese in texture, semi-soft cheeses like mozzarella, Monterey Jack, and Havarti are versatile and widely available in the US. They have slightly more carbs than most hard cheeses: about 2-3 grams per 100 grams. Veined blue cheeses like Gorgonzola and Stilton also belong to this category.
- **Plain Greek yogurt:** If you're a yogurt lover, plain Greek yogurt is by far your best choice for low-carb or keto eating. It has fewer carbs and is thicker than other yogurts because more of the liquid whey (which contains the milk sugar lactose) has been strained during

processing. Although carb counts vary slightly among different brands, Greek yogurt has about 3 grams of carb per 100 grams (a little less than ½ cup) and 5 grams per 170-gram (¾ cup) container.

- **Heavy cream:** Heavy cream is made by skimming the fat off the top of milk. Although it is much lower in carbs than milk, it's not a zero-carb food. Heavy cream contains about 3 grams of carbs per 100 grams (about 0.5 gram per tablespoon).

Middle carb: (4-7 grams per 100 g/3.5 ounces)

- **Feta and Parmesan cheese:** Even though they're slightly higher in carbs than some other cheeses, feta and Parmesan can still be a good fit for a keto or low-carb diet. Both contain about 4 grams of carb per 100 grams (about ⅔ to 1 cup), or slightly more than 1 gram of carb per ounce (30 grams).
- **Light cream:** Similar to heavy cream, but with a lower fat content, light cream provides 4 grams of carbs per 100 grams, or 0.5 gram per Tablespoon.
- **Sour cream:** Adding lactic acid bacteria to light cream results in pleasantly tart-flavored sour cream. It also thickens the product without changing the carb content: 4 grams per 100 grams.
- **Cottage cheese:** Cottage cheese is made by adding acidic bacteria to milk, causing the casein to curdle and create curds that separate from the whey. These curds give cottage cheese its lumpy appearance. It contains about 4 grams of carb per 100 grams (approximately 1/2 cup).
- **Half and half:** Appropriately named, this popular creamer choice contains 50% milk and 50% cream. It provides about 5 grams of carb per 100 grams, or 0.6 gram per Tablespoon.
- **Whole-milk plain yogurt:** Like Greek yogurt, whole-milk plain yogurt is made with bacteria that ferment most of the lactose in milk into lactic acid. Because it isn't strained, it retains a few more carbs than Greek yogurt does: about 5 grams per 100 grams, or 9 grams per 170-gram (¾ cup) container. Exact carb counts vary from brand to brand.
- **Kefir:** Similar to yogurt in taste, kefir is a thick beverage made by fermenting milk with a combination of bacteria and yeast. The carb content varies between 4 and 7 grams per 100 grams, depending how it is made.
- **Ricotta cheese:** Smooth, slightly sweet ricotta was traditionally made using the liquid whey left over from producing hard cheese. Today, it's made from fresh whole milk and vinegar. Whole-milk ricotta contains about 4 to 7 grams of carbs per 100 grams (approximately ½ cup), although this can vary among different brands. Low-fat types are typically higher in carbs.
- **Cream cheese:** Although its name might lead you to think it's extremely low in carbs, cream cheese provides about 5-7 grams of carbs per 100 grams. It's made by adding lactic acid bacteria to a combination of milk and cream and then heating the mixture, producing a rich, creamy texture. It can be a good choice on a keto diet when consumed in modest amounts.

Highest carb (12-25+ grams carbs per cup)

- **Milk:** Although the amounts of fat differ, carb counts are the same for all types of milk: whole milk, low-fat, and nonfat (skim) milk: about 12 grams per cup (250 ml).
- **Buttermilk:** Despite its name, buttermilk is quite low in fat — and high in carbs. In fact, it contains the same 12 grams of carb per cup as other types of milk.
- **Sweetened or fruit-flavored yogurt:** Unsurprisingly, sweetened yogurts are very high in carbs: 20+ grams per 170-gram ($\frac{3}{4}$ cup) container.
- **Light yogurt:** What about “light” or “lite” yogurt? Although they’re marketed to health-conscious consumers, many light yogurts contain added sugar. Be sure to read labels. Some brands of “light” yogurt contain 18 or more grams of carb per 170-gram ($\frac{3}{4}$ cup) container.

Top 10 Keto Fats, Sauces and Oils

The Good, the Bad and the Ugly

The numbers are net carbs per 100 grams (3.5 ounces) of food.



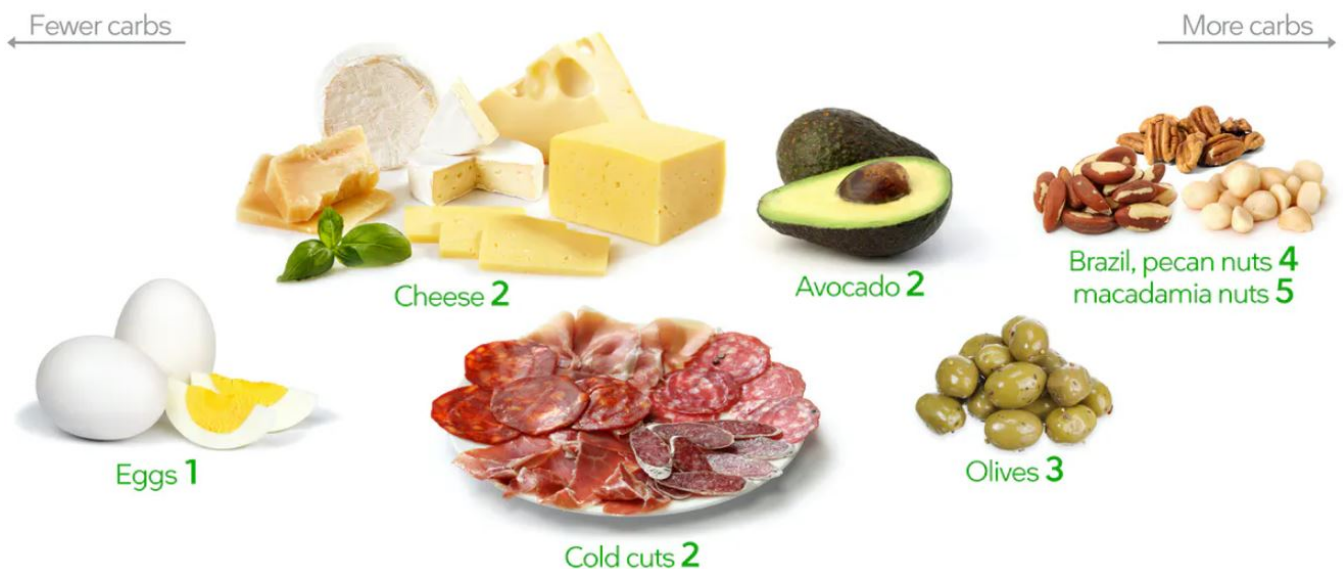
Butter **0**
Coconut oil **0**
Vinaigrette **0**
Mayonnaise **1**
Béarnaise sauce **2**

Hollandaise sauce **2**
Ranch dip **2**
Aioli **2**
Mustard **2**
Guacamole **3**
Thousand islands dressing **3**
Heavy cream **3**
Soy sauce **4**
Blue-cheese dressing **4**
Salsa **6**
Pesto **8**
Tomato paste **15**

Keto Snacks

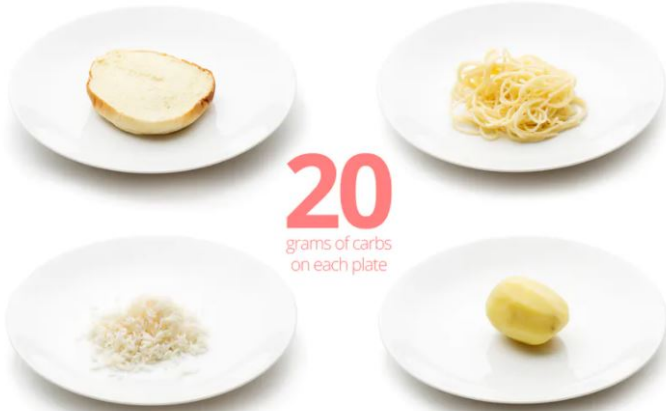
The numbers are net carbs per 100 grams (3.5 ounces) of food.

Easy keto whole foods

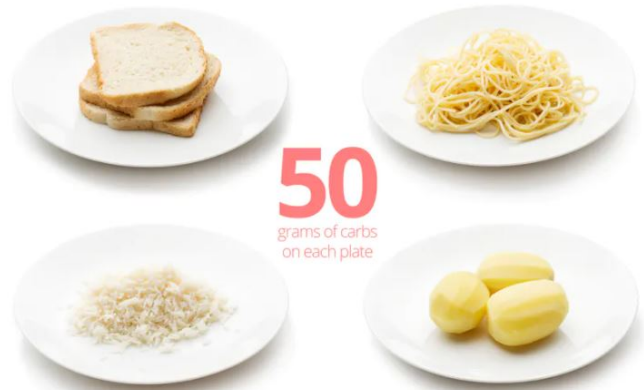


How much food is 20 or 50 grams of carbs?

20 grams of carbs in high-carb foods



50 grams of carbs in high-carb foods



20 grams of carbs in lower-carb foods



50 grams of carbs in low-carb foods



To go into ketosis, and stay there, you are almost certain to succeed by eating fewer than 20 net grams of carbs each day. While healthy, active and insulin sensitive individuals can remain in ketosis at higher levels of carb intake, others must be stricter with their carb intake.

Keto Drinks

The numbers are net carbs per 100 grams (3.5 ounces) of food.



Water 0 (The clear winner)

Water with lemon 0

Tea 0 (one sugar cube adds 4 grams)

Keto iced tea 0

Coffee 0 (milk adds roughly 1-3 grams of carbs)

Diet soft drink 0 (artificial sweeteners cause other problems though)

Wine 2 (5 oz. – 14 cl)

Almond milk, unsweetened 2 (8 oz. – 25 cl)

Coconut water 9 (1 cup – 24 cl)

Vegetable juice 11 (1 cup – 24 cl). The number of carbs can vary. Adding fruit juice adds more carbs.

Milk 11 (1 cup – 24 cl). Lactose, the sugar in milk can be problematic for some.

Soy milk 12 (1 cup – 24 cl)

Beer 13 (12 oz. – 35 cl). The amount varies

Café latte 15 (12 oz. – 35 cl)

Kombucha tea 10 (12 oz. – 35 cl). This is the average of commercial teas. Homemade Kombucha tea varies with the time it has fermented, and may end up somewhat lower in carbs.

Orange juice 26 (1 cup – 24 cl)

Energy drink 28 (8.4 oz. – 25 cl)

Vitamin water 32 (12 oz. – 35 cl)



Sweetened iced tea 32 (12 oz. – 35 cl). This is the average of most commercial iced tea products, which vary in their amount of sweetness.

Soft drink 39 (12 oz. – 35 cl)

Smoothie 36 (12 oz. – 35 cl). Varies depending on contents. May be low carb, but not typically keto ratios.

Frappuccino 50 (12 oz. – 35 cl). All sweet coffee drinks are high in carbs.

Milkshake 60 (10 oz. – 30 cl). Not part of a ketogenic diet.

Enjoy		Limit or avoid	
			
<p>Make low carb simple and delicious with Diet Doctor Plus. Get access to all recipes, meal plans, shopping lists and much more. Try it for free: dietdoctor.com/plus</p>			
Protein	<ul style="list-style-type: none">• beef• deli meats*• eggs• game• lamb• poultry• pork• sausages*• seafood• tofu, tempeh, natto*	Beverages	<p>Water: Still or sparkling water, with a slice of lemon or lime, if you like</p> <p>Coffee and tea: with a little cream, if you prefer</p>
Vegetables	<ul style="list-style-type: none">• artichoke• asparagus• avocado• bok choy• broccoli• Brussels sprouts• cabbage• cauliflower• celery• cucumber• eggplant• fennel• garlic• green beans• hearts of palm• herbs• jicama• kohlrabi• leafy greens• leeks• mushrooms• okra• olives• onions• peppers• pickles*• pumpkin• radishes• rhubarb• rutabaga• shallots• snow peas• sprouts• squash• sugar snap peas• tomatoes• turnip• zucchini	Full-fat dairy	Natural fats
		<ul style="list-style-type: none">• butter• cheeses of all kinds• cottage cheese• cream cheese• ghee• heavy cream• mascarpone• ricotta• sour cream• yogurt – plain, full-fat	<ul style="list-style-type: none">• avocado oil• chicken fat (schmaltz)• coconut milk• coconut oil• full-fat salad dressings*• ghee• lard and tallow• mayonnaise• nuts and nut butters• nut oils of all types• olive oil• sesame oil
			Sugar <p>Sugar is in soft drinks, candy, juice, sports drinks, chocolate, cakes, pastries, sweetened yogurts, ice cream, and breakfast cereals.</p> <p>Low-fat and fat-free milks contain milk sugar. Sugar can also hide in many products. Read labels carefully to avoid hidden sugars.</p>
			Starch <p>Starches include bread, cereal, pasta, rice, potatoes, French fries, potato chips, bagels, crackers, legumes (most dried beans), porridge, oatmeal, and muesli.</p> <p>Starchy foods turn into sugar when they are digested. This includes whole-grain and whole-wheat products.</p>
			Fruit <p>Most fruit contains a lot of sugar. Tart fruit, such as berries, lemons, and limes, or fruit with a high water content, such as melons, are okay in moderate or small amounts.</p>
			Alcohol and sweeteners <p>Some low-carb alcohols, such as dry wines, spirits without sweet mixers, and low-carb beer, are okay in moderation. Diet sodas, dark chocolate, and non-caloric sweeteners can be used occasionally. However, some people find progress toward health goals is slowed or halted with these items.</p>