

In the initial stages of a low-carb or ketogenic diet (the [fat-adaptation period](#)), internal glucose from GNG (definition below) and glycolysis will provide a good portion of glucose as an energy substrate. At this point, your ability to produce and utilize ketones isn't quite optimized. However, after a few weeks, ketogenesis hits full force and your body becomes a ketone-burning (and producing) machine.

Glucose is a simple sugar. In the body, a lot of glucose is present as blood glucose and serves as a major fuel source for organs, tissues, and metabolic pathways and processes. While we can break down food substances such as carbohydrates into glucose for fuel, our body can also create its own glucose from non-carbohydrate carbon sources; this process is known as gluconeogenesis—or GNG for short. To better understand gluconeogenesis, let's start with a short refresher on glycolysis—the process by which we break down carbohydrates (glucose) to produce energy. During this process, which takes place in the cytoplasm of mitochondria, a glucose molecule is energized by adding **ATP** (an end product of the digestion process).

Then, a cascade of steps occurs involving the production of the following molecules, in order: conversion of glucose-6 phosphate to fructose-6 phosphate to fructose 1,6-bisphosphate to glyceraldehyde-3 phosphate to 1,3-bisphosphoglycerate to 3-phosphoglycerate, then 2-phosphoglycerate, to phosphoenolpyruvate (PEP). Finally, PEP is acted on by an enzyme known as pyruvate kinase, and we are left with is something called pyruvate (important to remember) and two molecules of ATP, the energy currency for the cell.

Gluconeogenesis also plays a role in low-carbohydrate and ketogenic diets, where it allows us to maintain blood glucose levels despite very little dietary carbohydrates being consumed.

A low-carbohydrate diet, in some sense, “mimics” low energy availability without malnutrition.

Carbohydrates aren't coming in, forcing the body to find alternative routes of energy production. Interestingly, some drugs for type 2 diabetes target gluconeogenesis—inhibiting the process of glucose formation and stimulating glucose uptake.

GNG can provide the small amount of glucose necessary for the tissues that require it, and the rest of the body's energy can be supplied from the breakdown of fat and the production of ketone bodies to fuel tissues like the heart and skeletal muscle.

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National Institute of Health: A recent systemic review and meta-analysis of randomized controlled trials comparing **the long-term effects (greater than 1 year) of dietary interventions on weight loss showed no sound evidence for recommending low-fat diets.** In fact, low-carbohydrate diets led to significantly greater

weight loss compared to low-fat interventions. **It was observed that a carbohydrate-restricted diet is better than a low-fat diet for retaining an individual's Base metabolic Rate (BMR).** In other words, the quality of calories consumed may affect the number of calories burned. BMR dropped by more than 400 kcal/day on a low-fat diet when compared to a very low-carb diet.

A well-formulated ketogenic diet, besides limiting carbohydrates, it does not restrict fat or overall daily calories. People on a ketogenic diet initially experience rapid weight loss up to 10 lbs in 2 weeks or less. **This diet has a diuretic effect,** and some early weight loss is due to **water weight loss followed by a fat loss.** Interestingly with this diet plan, lean body muscle is largely spared. As a nutritional ketosis state sustains, hunger pangs subside, and an overall reduction in caloric intake helps to further weight loss. A diet high in fat and low in carbohydrates (sugars) that **causes the body to break down fat into molecules called ketones.** Ketones circulate in the blood and become the main source of energy for many cells in the body. A ketogenic diet is used to treat some types of epilepsy and is being studied in the treatment of some types of cancer.

Metabolic Syndrome:

The cluster of metabolic factors include **abdominal obesity, high blood pressure, impaired fasting glucose, high triglyceride levels, and low HDL cholesterol levels.** Metabolic syndrome greatly raises the risk of developing diabetes, heart disease, stroke, or all three.

- High blood [glucose](#) (sugar) 5.7 or higher
- Low levels of [HDL](#) ("good") cholesterol in the blood under 50
- High levels of [triglycerides](#) in the blood over 100
- Large [waist circumference](#) or "apple-shaped" body your goal for waist circumference is less than 40 inches if you're an adult man
- [High blood pressure 140/80](#)

The Big Lie

The Seven Countries Study (SCS), led by Ancel Keys, was for many decades considered the bedrock data for the diet-heart hypothesis. Launched in 1957, the study was larger and more ambitious than any U.S. nutrition study to date. By 2004, according to one estimate, SCS had already been cited more than one million times. The SCS followed some 12,770 men in 16 locations within seven countries, including Italy, Greece, Yugoslavia, Finland, the Netherlands, the United States and Japan. Keys, due to his worldwide travels, knew that choosing these countries was likely to confirm his hypothesis. He did not include, for instance, places like Germany, Switzerland, and France, where people ate a great deal of saturated fat yet experienced rates of heart disease similarly low to those included in the SCS. Keys' selection of nations has given rise to the critique that he 'cherry picked' countries to 'prove' his hypothesis. While

defenders of the SCS have attempted to dismiss this allegation , it remains true that Keys used a nonrandom approach for the selection of countries in SCS, allowing for the introduction of bias

For instance, Keys sampled dietary data from only 3.9% of the men, which is fewer than 500 total participants, or about 30 per location. Further he used unvalidated and nonstandardized methods of dietary evaluation that differed across groups. On Crete, one of the dietary samples was taken during the period of Lent, which was strictly observed under the Greek Orthodox church and would have banned 'all animal foods' . Saturated fats were therefore very likely undercounted in this population, yet Keys downplayed this issue in his report and concluded that the excellent health of the Cretans could be credited to their low consumption of these fats. The failure to adjust for the Lent data was a 'remarkable and troublesome omission,' wrote researchers in *Public Health Nutrition* in 2005 , yet this analysis took place long after the diet-heart hypothesis had become solidified as public policy.

In 1989, a re-analysis of the SCS data by some of the original study researchers found that coronary mortality best correlated not with saturated fats, as originally reported, but with 'sweets,' defined as sugar products and pastries . Possibly the correlation would have been even stronger if the 'sweets' category had included chocolate, ice cream, and soft drinks, but researchers said data on these items were too difficult to combine.

Saturated fats are increasingly being viewed as part of the food matrix and dietary patterns in which they appear naturally, rather than as an isolated nutrient . Cheese and yogurt, for example, contain not only saturated fats but also other fatty acids, proteins, the milk fat globule membrane, potassium, and a number of essential nutrients including calcium, phosphorus, vitamins A, D, and B₁₂, riboflavin, niacin and pantothenic acid. These nutrients interact with each other, and one can play a role in the effective absorption of another. For instance, fat-soluble vitamins such as A and D require fat for absorption. Moreover, the lack of consistent relationships of foods to CVD risk based on their saturated fat content is likely due in part to variation in effects of the overall food matrix and varying content of specific saturated fatty acids in these foods, as well as the dietary patterns in which they are consumed .

In addition to the food matrix, the overall dietary pattern, particularly the level of carbohydrate, has an important impact on the way saturated fat is metabolized . For example, if lowering saturated fat intake is achieved by consuming more carbohydrate, there is likely to be an adverse effect on CVD risk . On the other hand, higher saturated fat intake in the context of a low-carbohydrate diet promotes less stimulation of insulin and greater oxidation of saturated fat. **Such low-carbohydrate diets have been repeatedly shown to result in less accumulation of circulating saturated fatty acids and improved diabetes as well as cardiometabolic risk status .**

Recently, some medical professionals and professional organizations have endorsed Low-Carb Diets (LCDs) as a legitimate and successful choice for

treating diabetes and obesity . It is a scientific area, though, and as such it is rife with controversies, contradictory findings, differing expert perspectives, and potential ambiguity for both healthcare professionals and their patients. This approach to treat diabetes and obesity is not novel.

According to the level of carbohydrate restriction used in contemporary clinical practice, less than 20 g/day, or 10% of overall calorie consumption, is considered an especially small carbohydrate consumption (although some suggest a maximum of 50 g). Fewer than 30 g/day, or less than 26% of overall energy intake from carbohydrates, is generally considered as the cutoff for “low” carbohydrate consumption. **A carbohydrate consumption beyond 50 g per day is typically insufficient for ketogenesis, because in general, the more carbohydrate restriction, the greater the degree of ketogenesis** . As a result, “low carb” and “ketogenic” are not nutritional terms that are interchangeable but rather overlap each other. **The limitation of carbohydrates is currently accepted as a valid therapeutic approach in international guidelines for the nutritional management of type 2 diabetes** .

“Lies my Doctor Told Me”

Eating six small meals a day is ideal for managing diabetes or weight loss. As with all the other lies, there is no research to back up this claim. Just like the three square meals advice of the past had no basis in research or medical fact, the idea of six small meals a day didn’t have any scientific backing. You should eat as many times a day as you are hungry, whether this is once or four times. Eating six meals daily will keep your insulin level elevated and probably lead to weight gain. It’s likely that you’ll only get hungry six times per day if you’re eating a high-carb, low-fat diet. Eating a diet with healthy fats produces a lasting sense of fullness, and you won’t be hungry that often. Also, there is increasing research that shows that intermittent fasting (eating fewer meals each day) might be a much better strategy for longterm, meaningful weight loss.

I can summarize the concepts with these statements: **We humans have been on this planet an incredibly long time. For 99.99 percent of that time, we never, ever ingested grains, sugar, or milk; we never drank fruit juices or high-calorie liquids. We lived mostly on fatty meat and green plants, seeming to prefer the fatty meat when we could catch it.** To get the health, mind, and body we want, we must honor our past way of eating and living and realize that our DNA hasn’t had time to catch up with all the starches, sugars, and grains we are taught to consume in our modern life. Your DNA responds to unnecessary sugars and starches by putting them right where you don’t want them as adipose tissue on your belly, butt, and thighs. Your body also puts this adipose tissue in your liver, where it can lead to abnormal liver function and severe liver disease.

NUTRITION IQ QUIZ True or False?

1. Bananas are the best natural source of potassium.

2. Frozen berries are better for you than fresh.
3. You should eat at least five servings of fruit each day.
4. Juicing is a great way to get plenty of fruit into your diet.
5. Pomegranates are one of the best fruits you can eat.
6. Buying organic is a waste of money.
7. Apples are the most nutritious fruit. One a day keeps the doctor away.

Answers

1. False: We get more potassium from avocados and other plant foods without the sugar.
2. True: Believe it or not, frozen berries have high levels of nutrients because they are picked ripe and frozen right away. Fresh fruit is often picked too soon, transported long distances, and stored.
3. False: That's too much. Although fruit contains fiber, vitamins, and phytonutrients, it can spike blood sugar. Grapes, pineapples, and most melons are the worst offenders.
4. False: Juice delivers all the sugar, or fructose, of fruit, which your body quickly absorbs, and none of the fiber. Fructose can cause insulin resistance and weight gain. It also stimulates lipogenesis, the process of making fat and dangerous types of cholesterol and triglycerides in your liver, which can lead to fatty liver disease, obesity, type 2 diabetes, heart disease, cancer, and dementia.
5. True: They're a superfruit because of all the antioxidants they contain.
6. False: Eat organic apples, berries, and other fruit to minimize your exposure to toxic pesticides. Check out the Environmental Working Group's list of the Dirty Dozen for more info.
7. False: Apples are fine, but there are other fruits that are much more nutrient- and phytonutrient-rich, such as blackberries, blueberries, and raspberries.

Low Carb/Healthy Fats

Ground beef 80/20

Chicken - thighs with the skin have the densest nutritional value, but ANY Chicken with the skin on is good.

Stop all sugars including honey, agave, maple syrup

Remove grains wheat, rice, oats, corn (inflammation causing)

No factory vegetable seed oil. Corn, soybean, peanut, veggie, canola, Crisco, margarine, safflower,

Watch Omega 6 oil levels

Keep in mind that not all vegetables are low in carbs. Some should be **avoided** on low carb, including:

potatoes and sweet potatoes onions (in large amounts) certain winter squashes, such as acorn squash, and butternut squash, corn, beets,

honey, agave, maple syrup, fruit juice, molasses, grains, wheat, processed grains

corn, oats = glucon

OK - Butter, bacon grease, olive oil, avocado oil, lard, coconut oil

Use some quality Salt

Eat whole foods not the packaged keto stuff. Beef, broccoli, nothing with a UPC on it

You need minerals - Sodium, magnesium, chloride, potassium

Eggs	tomatoes
Frozen veggies	spaghetti squash
Bacon	jicama
Greens turnip, kale, spinach,	radishes
Canned fish	turnips
Pecans	Brussels sprouts
asparagus	celery
broccoli	okra
cabbage	almonds
cauliflower	macadamia nuts
mushrooms	pecans
cucumber	walnuts
green beans	chia seeds
eggplant	flaxseeds

[Berries](#), particularly raspberries and strawberries, are low in carbs and high in fiber.

While blackberries and blueberries are lower in carbs than some other fruits, they may not fit into strict diets

1 brazil nut

½ oz cashews Immunity/insulin resistance

½ oz walnuts brain/blood

25 g Pistachios metabolism/glucose control/anti-inflammatory

60 g Almonds Glucose control/anti-inflammatory/cholesterol

You do not need to eat 2 cups of leafy greens and 1 cup of nonstarchy vegetables per day if you do not want to. You do not need to use added fats and oils if you are satisfied with the fat that comes naturally with your meat, poultry, cheese, and so on. • Proteins:

All cuts are permitted—chops, roasts, steaks, ground meats, sausage (**no sugar or starchy fillers**), bacon, cured or processed meats (salami, pepperoni, lunchmeat—read labels for total carbs), all poultry cuts, organ meats. • Seafood: Canned fish is permitted (tuna, salmon, sardines, mackerel); **avoid imitation seafood**.

Keto %

20% protein 4 cal per gm

70% fat 9 cal per gm

5% veggies
5% carbs

Vitamins

Curcumin – (500 mg tested) Cholesterol (Lower LDL raise HDL), Insulin Resistance, improve Pancreatic cell function.

Turmeric, add Black pepper increases efficiency 5000%

(Combine) These work together

Vit D3 – 20,000 IU Autoimmune

Vit K2 (mk7) 200 mcg partners w/ Vit D3 increased cell availability – decreases DPUCMGP - decreases dumping protein into urine, lowers calcification. (Found in fermented food)

Zinc Autoimmune 50 mg

Omega 3 – 2600 mg Cholesterol