

Ketogenic Diets

A **ketogenic** (“keto”) diet is an extremely carbohydrate-restrictive, high-fat diet.

A ketogenic diet restricts carbohydrate intake to less than 25 to 50 grams per day in an attempt to enhance tissues to use fat or **ketones** (acids produced by the liver) as fuel during caloric restriction. Ketogenic diets typically recommend that only 5% of calories come from carbohydrates, along with 75% from fat and 20% from protein.

Medical Uses of Ketogenic Diets

Ketogenic diets were first used in the 1920s to treat diabetes prior to the discovery of insulin. These diets were also used to treat difficult-to-control epilepsy in children. Recently, ketogenic diets have been promoted as weight-loss diets and to control blood glucose in patients with prediabetes and type 2 diabetes. Keto diets may lead to weight loss in the short term, but that weight loss is similar to what is achieved with other dietary approaches over the long term. Keto diets may improve blood glucose in the short term in patients with type 2 diabetes, but there is inconclusive scientific evidence that these diets are superior to other weight-loss regimens in the long term. Claims of benefits of the ketogenic diet for cancer, dementia, and Parkinson disease are not scientifically substantiated.

Do Ketogenic Diets Improve Health?

Ketogenic diets result in weight loss for those who successfully use this strategy to reduce overall caloric intake by limiting all carbohydrate-rich foods like breads, pasta, rice, cakes, cookies, and colas. Most fruits, legumes, and whole grains are also essentially off limit. Currently, long-term data on keto diets and cardiovascular, cancer, and other chronic disease risks are lacking, and low-carbohydrate diets have been linked to increased mortality.

Who May Benefit From a Ketogenic Diet?

Individuals wishing to lose weight using a very structured approach may benefit from a keto diet. For patients with prediabetes or type 2 diabetes, limiting carbohydrates to 5% of calories can help control blood glucose if it contributes to weight loss and weight maintenance.

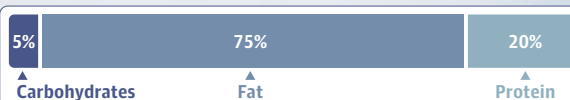
Potential Risks and Side Effects of a Ketogenic Diet

It is common to experience fatigue during exercise, poor mental energy, increased hunger, sleep disturbance, muscle cramps, constipation, nausea, and stomach discomfort. Over the long term, a diet in which only 5% of total calories come from carbohydrates makes it impossible to obtain optimum amounts of antioxidant phytonutrients from fruits and vegetables. In the first 2 weeks of the diet, there may be significant increases in urine production and fluid shifts that may require adjustment of medications for hypertension, heart failure, and diabetes. It is important to consult with a physician be-

Ketogenic diet

The ketogenic diet was first developed in the 1920s for the treatment of diabetes and pediatric epilepsy. It is now associated with weight loss and blood glucose control for patients with prediabetes and type 2 diabetes.

Recommended calorie sources



Foods to eat

- + Full-fat dairy products
- + Meat and poultry
- + Nonstarchy vegetables
- + Coconut and olive oils
- + Nuts and seeds
- + Avocado
- + Olives
- + Eggs



Foods to avoid

- Grains (bread products)
- Oatmeal, rice, and quinoa
- Corn or flour tortillas
- Starchy vegetables
- Potatoes
- Beans
- Pasta
- Fruit



Potential risks and adverse effects

Low physical and mental energy, hunger, sleep disturbance, muscle cramps, constipation, and stomach discomfort during the first 2 weeks of the diet

Increased urine production and fluid shifts in the body may require adjustment of blood pressure, heart failure, and diabetes medications.

fore trying a ketogenic diet. You should change your diet only under the supervision of a physician and a registered dietitian.

FOR MORE INFORMATION

Mayo Clinic

<https://www.mayoclinic.org/healthy-lifestyle/weight-loss/in-depth/the-truth-behind-the-most-popular-diet-trends-of-the-moment/art-20390062>

Authors: Zhaoping Li, MD, PhD; David Heber, MD, PhD

Author Affiliations: Center for Human Nutrition, David Geffen School of Medicine at UCLA, Los Angeles, California.

Conflict of Interest Disclosures: Dr Heber reported receiving personal fees from Herbalife Nutrition. No other disclosures were reported.

Source: Abbasi J. Interest in the ketogenic diet grows for weight loss and type 2 diabetes. *JAMA*. 2018;319(3):215-217.

The JAMA Patient Page is a public service of JAMA. The information and recommendations appearing on this page are appropriate in most instances, but they are not a substitute for medical diagnosis. For specific information concerning your personal medical condition, JAMA suggests that you consult your physician. This page may be photocopied noncommercially by physicians and other health care professionals to share with patients. To purchase bulk reprints, email reprints@jamanetwork.com.