

## Very Low Carbohydrate Diets

The very low carbohydrate diet trend started in the 1970s and was popularized in the 2000s by the Atkins Diet. The advertised purpose of this diet is stated to be that by consuming less than 20 grams of carbohydrates a day instead of the recommended minimum amount of carbohydrates of 130 grams you will induce ketosis, and lose weight in the form of fat loss. Ketosis is a metabolic function that breaks down your fat stores to produce ketone bodies as an alternative source of fuel to replace the preferred glucose. The truth is, individuals on the Atkins diet often experience weight loss largely because they're losing water weight. Chemically speaking, for every 1 gram of glycogen (the body's stored form of glucose), there are 3-4 grams of water associated with it; therefore when you deprive yourself of carbohydrates, your glycogen stores are being broken down and water is being excreted. If your goal is weight loss, the best 'diet' for you is one that you can stick to; following a very low carbohydrate diet and maintaining adequate nutrient levels is really difficult and typically unsustainable over time.

### Why are carbohydrates important for health?

1. **Glucose (a sugar form of carbohydrate) is the preferred use of fuel for your brain.** When you starve yourself of this essential macronutrient, ketone bodies are produced, which lower your blood pH, which can result in death. Healthy individuals will develop nutritional ketoacidosis while diabetics may develop diabetic ketoacidosis, where ketone bodies are produced and thus lower the pH of your blood to potentially fatal levels.
2. **Carbohydrates are the backbone of very nutritious foods.** Starches, such as whole wheat bread, cereal, rice, crackers, pasta, potatoes, peas, corn and beans; sugars, such as fruits and dairy; and fiber, such as **whole grains, fruits, and veggies are all great sources of 'healthy' carbohydrates.** It is important to consume these types of carbohydrates for energy and to maximize vitamin, mineral, and fiber consumption to promote metabolic functions throughout the body and maintain a healthy GI tract.
3. **Fiber** is found in a variety of foods including fruits, vegetables, beans, lentils, whole grains, nuts, and seeds. Fiber is very important because it assists in the absorption of nutrients, such as lipids, which can help decrease cholesterol. The absorption of fiber also causes a gel formation to occur in your GI tract, which delays gastric emptying and provides you with an increased sensation of satiety, which makes you feel "full." One of the most important things fiber does is it helps keep you regular! Through an adequate consumption of fiber rich carbohydrates you decrease your risk for cardiovascular disease, type II diabetes, and cancer.
4. **Prevent 'Bonking' in endurance athletes.** Your muscle and liver can store ~2,000 calories of glycogen, which is the stored form of glucose. This glucose comes from the consumption of carbohydrates in the diet. Carbohydrates are the optimal fuel for endurance athletes because they are easily digested and readily available to use to fuel your muscles. When you consume adequate amounts of carbohydrates you spare your protein sources as fuel and can prevent early fatigue and injury. When you hear an

athlete talking about 'Bonking,' this means their glycogen stores ran out in their muscle and liver and they have to resort to fat, which is much more metabolically taxing.

### **What are some potential side effects to consuming an extremely low carbohydrate diet?**

- **Hypoglycemia.** When your blood glucose level drops to below 70mg/dL you might become shaky or jittery, get a headache, have blurred vision, get dizzy or lightheaded, or in the most severe cases lose consciousness.
- **Ketoacidosis.** The production of ketone bodies lowers the pH of your blood, making it more acidic, which can change the normal functioning of internal organs like your liver and kidneys. In severe cases it can be fatal.
- **Micronutrient Deficiencies.** When you eliminate fortified grains, fruits, veggies, dairy and other nutrient rich carbohydrates from your diet you are also depriving your body of necessary vitamins and minerals. If sustained for long periods of time, you could develop more serious problems such as compromised immunity and decreased bone density as well as an increased risk of cancer.

I hope this leaves you with enough information to realize that carbohydrates really are not the enemy and that they offer much nutritional value when they are consumed. If weight loss is your aim, then the best diet is one that you can stick to. Following a very low carbohydrate diet and maintaining adequate nutrient levels is really difficult and unsustainable. **One thing to think about would be minimizing the amounts of added sugars in your diet by limiting your consumption of baked goods, sugar sweetened beverages,** etc. The major problem with dieting is adherence. I don't believe that dieting is the long term solution, lifestyle changes are. One really simple meal planning trick I learned when interning at the United States Ski and Snowboard Association that might work for you, was to **try to have every meal include 1 carbohydrate, 1 protein, and at least 1 vegetable.**

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Please note that the article above is not catered towards individuals with diabetes.