

## **Why the Keto Diet May be the Worst Way to Eat**

The Ketogenic diet, or Keto diet for short, has seen a recent rise in popularity as Americans search for the best way to improve their health and shed some extra weight. However, this approach to “dieting” has serious negative health consequences that are often unknown to new and seasoned followers alike. This paper will outline several dangers to following the Keto diet based on the best current nutrition research.

The Ketogenic diet was originally developed in the 1920’s as a treatment for children suffering from epilepsy<sup>[1,2]</sup>. It was never intended or designed to be a long term weight loss plan for adults. This high fat, moderate protein, low carbohydrate diet derives approximately 60% calories from fat, 30% protein, and 10% or less from carbohydrates. In order to achieve this, followers have to limit carbohydrates such as whole grains, beans, most fruits, and starchy vegetables in favor of high-fat dairy, refined oils, and red meat<sup>[3]</sup>. Enthusiasts report benefits for a variety of conditions such as diabetes, heart disease, and cancer in addition to weight loss. However, best current nutrition research shows that not only does the Ketogenic diet fail to help with these chronic diseases, it can actually make them worse<sup>[4,5,6]</sup>.

### **Gastrointestinal Disease**

For the past 18 million years, humans and our ancestors have consumed a high fiber diet<sup>[7]</sup>. Scientists estimate that prehistoric diets (including the Paleo diet) consisted of 70-100 grams of fiber daily. For reference, current recommendations are 28 grams for women and 34 grams for men daily<sup>[8]</sup>. Because the best sources of fiber are beans and whole grains, low-carb diets such as the Keto diet often do not provide adequate amounts of this essential nutrient<sup>[9]</sup>. In order to consume the recommended daily amount of fiber on a Ketogenic diet, one would have to eat nearly 14 cups of raw kale. Constipation is one of the most common reported side effects among those following this diet and is associated with diverticular disease, varicose veins, hemorrhoids, and hiatal hernias<sup>[10,11]</sup>. Diets high in fat have been implicated in leaky gut syndrome, allowing bacteria to translocate from our intestine into the blood stream causing acute low-grade systemic inflammation<sup>[12]</sup>. Whole grains and beans are an excellent source of pre-biotic fiber which increases the number and diversity of good gut bacteria<sup>[13]</sup>. Fiber helps lower cholesterol, regulate blood sugars, bind and eliminate toxins, and reduce colon cancer risk, to name a few<sup>[14]</sup>. Moreover, whole grains and beans are anti-inflammatory; these foods when

consumed as part of a semi-vegetarian diet have shown to be the most effective treatment for Crohn's disease to date<sup>[15]</sup>.

## **Cardiovascular Disease**

Scientific consensus overwhelmingly shows that cholesterol and saturated fat, which are often consumed in excessive amounts on a Keto Diet, are not good for heart health <sup>[16,17,18]</sup>. Moreover, foods that contain these compounds lack pre-biotic fiber, protective phytonutrients, and are relatively low in antioxidants <sup>[19]</sup>. Heme iron, carnitine, choline, and a whole host of compounds found in meat increase cardiovascular disease risk in part by damaging the endothelial lining of our arteries <sup>[20,21,22]</sup>. High heat cooking methods (grilling, broiling, baking, roasting) generate dangerous compounds such as advanced glycation end products (AGE's) and heterocyclic amines (HCA) which further increase our risk for heart disease <sup>[23,24]</sup>. High intakes of fat interfere with vasodilation and vasoconstriction; a single high-fat meal causes our arteries to stiffen for 3-4 hours <sup>[25]</sup>. Conversely, beans and whole grains, which are not allowed on a Keto diet, are high in antioxidants, have anti-inflammatory effects, and help lower blood pressure and bad cholesterol <sup>[26,27]</sup>. These high carbohydrate foods are not just effective at reducing cardiovascular disease risk, they have been shown to stop and in some cases reverse, coronary artery disease<sup>[28,29]</sup>.

## **Diabetes**

Proponents of the Keto diet often report improved diabetes management, however this statement is largely unsupported. Type 2 diabetes is not a disease of excess carbohydrate intake; it is caused by the build-up of fat inside our liver, pancreas, and muscle cells in a process called "lipid toxicity" <sup>[30]</sup>. This accumulation interferes with the utilization of glucose by damaging the insulin producing cells in the pancreas, and increasing insulin resistance by impairing insulin signaling within our muscles. Most cases of diabetes are the result of excess calorie consumption regardless of where the calories come from (carbohydrates, fat, or protein) <sup>[31]</sup>. At the center of diabetes management should be a diet supporting weight loss. When we rank foods based on their calorie density, what we find is vegetables, fruits, whole grains, and beans are the lowest in calories and highest in nutrients <sup>[32]</sup>. For example, meat has approximately three times the calories per pound compared to fruit and nearly twice the calories of whole grains and beans.

The Keto diet is high in processed oils which average 4100 calories per pound and are the most calorie dense, nutrient poor foods available <sup>[33,34]</sup>. A single high fat meal increases insulin resistance relatively quickly and this effect can last for several hours <sup>[35,36]</sup>. People following a Ketogenic diet will see a temporary improvement in blood sugar control because of very low carbohydrate consumption but their insulin resistance remains or even worsens <sup>[37]</sup>. In summary, diets high in fat worsen diabetes by only addressing a symptom of diabetes (hyperglycemia) and not the cause (insulin resistance).

## **Cancer**

The World Health Organization published a report in 2015 warning that processed meats such as bacon, hot dogs, salami, pepperoni, and sausage, typically recommended on a Keto diet, increase our risk for colon cancer <sup>[38]</sup>. Red meat intake is associated with a higher risk of pancreatic, colorectal, and prostate cancers. Conversely, the World Cancer Research Fund reports that whole grain consumption is inversely associated with colon cancer risk <sup>[39]</sup>. The American Institute for Cancer Research recommends a diet high in fruits, vegetables, whole grains, and beans to help lower the risk of several types of cancer <sup>[40]</sup>. Simply put, many of the foods that the Ketogenic diet limits are exactly the foods we need to eat more of to prevent and fight cancer.

## **Weight Loss**

People lose weight on the Ketogenic diet, in part, because they are limiting unhealthy carbohydrates such as white sugar, refined flours, chips, crackers, and desserts. However, they are missing out on the weight loss benefits of healthy high carbohydrate foods such as whole grains, beans, and fruit <sup>[41,42]</sup>. Despite all this, weight loss alone is a poor indicator of the healthfulness of a diet. As clearly illustrated above, the Keto diet promotes weight loss at the expense of nearly every other aspect of your health. To quote world-renowned physician, author, and owner of NutritionFacts.org, Dr. Michael Greger, “Ketogenic diets tend to be so nutritionally vacuous that one assessment estimated that to get a sufficient daily intake of all essential vitamins and minerals, you would have to eat more than 37,000 calories a day.”<sup>[43]</sup>

With chronic disease rates and obesity skyrocketing, it is absolute essential that we fully comprehend the impact of nutrition on our health. The information presented above is only a small sampling of the current research denouncing the Ketogenic diet as a healthy dietary pattern to follow either short or long term. Most deaths and disabilities in the United States are preventable and related to nutrition<sup>[44]</sup>. The good news is that you are not a victim; every day you are presented with three opportunities to choose foods that will either hurt, or help your health. There are numerous healthy dietary patterns with benefits that have been well studied and have been established as safe and effective. At the core of these patterns is a diet centered around whole, unprocessed plant foods such as fruits, vegetables, whole grains, beans, and nuts and seeds. Current recommendations are to eat more whole grains, more fruit, more vegetables including starchy vegetables, less high-fat dairy products, and consume beans as a healthier alternative to meat and eggs<sup>[45]</sup>. For more information, check out the 2015-2020 Dietary Guidelines for Americans at [www.health.gov](http://www.health.gov). If you or your patient has a nutrition education question, please reach out to one of the clinical dietitians. We are always here to help.

In health,

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