The Ketogenic Diet

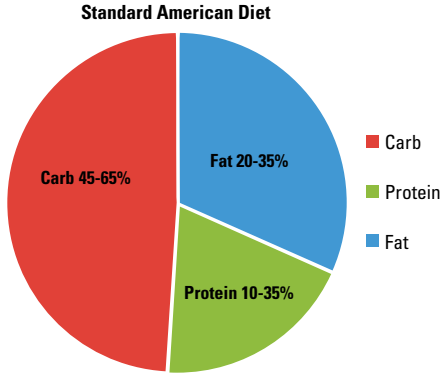
A word from Terry

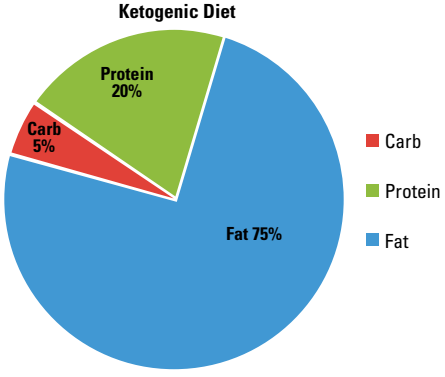
My guest author, Ellen Davis, has years of research and her own health experience in recommending the ketogenic diet. This diet is in line with many of my own thoughts about food and health, and I'm proud to introduce her to my readers as the author of this Terry Talks Nutrition®.

The Ketogenic Diet: Natural Health Booster

Ketogenic diets emphasize foods rich in natural fat and adequate in protein, and restrict foods high in carbohydrates (sugars and starches). The term "ketogenic" refers to the fact that when the body metabolizes fat for fuel, ketone bodies are created through a process called ketogenesis. When there are elevated levels of ketone bodies in the blood, one is said to "be in ketosis." As ketone levels in the blood rise, our cells can begin using them for fuel.

While the USDA guidelines recommend that 45-65% of our calories come from carbohydrates, ketogenic diets restrict carbohydrate intake to about 5% of calories. The charts below compare food group intake between the Standard American Diet (SAD) and a ketogenic diet.



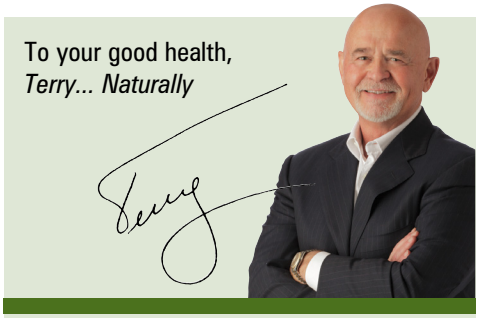


When foods containing sugars and starches are digested, they are broken down into blood sugar (glucose) in the body. The more of these carbohydrates we eat, the more glucose is made. Since excess blood sugar is toxic to the body (as many diabetics will attest) there are metabolic processes which push that sugar into our cells to be broken down or metabolized into energy or fuel. Only after excess glucose has been metabolized can cells turn to using stored or dietary fat for energy needs.

Reducing dietary carbohydrate intake has the effect of reducing blood glucose levels. Lower glucose availability switches our internal biochemical energy pathways to metabolizing fat instead. This results in the production of elevated amounts of ketones (ketogenesis). After a few weeks of restricting carbohydrate intake, these fat derived ketone bodies then become the main energy source for most cells.

Once the body is using ketones as a main fuel source, there are some profound and positive health effects. Ketogenic diets are terrific for weight loss and addressing health issues such as heartburn and achy joints. However, they are much more powerful than those popular uses would suggest. In other words, the low carb, ketogenic diet is not a "fad." It is a potent regulator of metabolic derangement, and when formulated and implemented correctly, it can be extremely effective in correcting a wide variety of health conditions.

In fact, switching to a high fat, low carbohydrate ketogenic diet can eliminate heartburn, improve cardiac risk factors and reverse the elevated blood pressure, high blood sugar and dyslipidemia associated with metabolic syndrome. In addition, formal research has shown that the metabolic effects of eating more fat and less carbohydrates can alleviate many other serious health issues. Medical researchers are using ketogenic diets to reduce the tremors of Parkinson's disease and help Alzheimer's patients regain memory and thought function, drive cancers into remission, provide diabetics better control over their blood sugar and lipid profiles, and for the past twenty years, hospitals all over the world have employed the ketogenic diet to improve epilepsy treatment outcomes for children and adults. In fact, epilepsy studies have found that the diet is more effective than most epilepsy drugs and with no toxic side effects.



TERRY'S BOTTOM LINE:

Our food choices have been wrongly skewed away from healthy proteins and fats for many years. The results have been an epidemic of diabetes, obesity, metabolic syndrome, chronic joint pain, and neurological disorders.

The Ketogenic Diet, with its emphasis on proteins and fats as fuel, can help your health in many ways:

- *Stop sugar cravings and weight gain*
- *Eliminate "brain fog" and fatigue*
- *Prevent or reverse diabetes*
- *Reduce inflammation and joint pain*
- *Slow progression of Parkinson's and Alzheimer's diseases*
- *Stop oxidative stress and damage to the cells*

How can a simple diet have so much power? The secret is the effect that reducing carbohydrate intake and increasing fat intake has on blood sugar, insulin and ultimately, cellular energy processes.

Most of our cells contain mitochondria which act as the power plants for the cell. These little organelles are responsible for generating cellular energy from oxygen and other molecules, and when they are healthy and running efficiently, the body works as it should. But when cellular mitochondria have problems, good health is compromised. In fact, mitochondrial health is an important factor in the pathology of diabetes and obesity, brain function and aging.

More...

And the foods we choose to eat have a direct consequence on the health of our mitochondria. Let me explain. Normal cellular respiration is an intense metabolic process in which the mitochondria transform food nutrients and oxygen into a cellular energy called ATP (adenosine triphosphate). As with any energy process involving oxygen, byproducts of oxidative stress are produced. Oxidative stress is what causes metal to rust and oils to go rancid when left exposed to the air.

In our cells, oxidative stress can create molecules called reactive oxygen species (ROS). These molecules, commonly called "free radicals" are chemically reactive and can damage internal cellular structures and genetic material. Because small amounts of ROS are created every minute as part of normal cellular respiration, our cells have been equipped with various antioxidant molecules to disarm them. So far, so good.

However, if inflammation is present, excessive amounts of ROS are created and overwhelm the cell's antioxidant defenses, causing accelerated damage and eventual cell death. This is why inflammation is linked with so many types of disease processes.

Here is where our food choices become very important. A steady diet of high carb foods leads to increased ROS and inflammation because these foods increase the amount of glucose and insulin in the bloodstream. This is the main problem with high carbohydrate diets. While glucose is an important fuel for the body, too much of it circulating in the bloodstream can harm body systems. How much is too much? Typically, a healthy individual will have less than one teaspoon of sugar dissolved in the bloodstream at any one time. Compare that to a canned soft drink which contains about ten teaspoons of sugar or a bagel which breaks down into about sixteen teaspoons of sugar in the bloodstream. These high carbohydrate foods provide much more glucose than the human body can handle efficiently.

Blood glucose is basically liquid sugar and if you have ever spilled fruit juice or syrup on your hands, you know how sticky it can be. In the body, this "stickiness" is called glycation. Glycation is a process in which excess blood sugar sticks to and damages the proteins of body tissues. These injured proteins stop functioning correctly, and this results in a chain of events that increase inflammation and create substances called "advanced glycation end products (AGEs)." Advanced glycation end products interfere with cellular function, and are linked to the progression of many disease processes including Alzheimer's, atherosclerosis and cardiovascular disease, stroke and autism.

Glycation damage is a direct function of glucose and insulin concentrations in the bloodstream. The higher the blood sugar, the more serious the damage. Glycation damage is why diabetics with chronically high blood sugar experience neuropathy, higher rates of cancer and heart disease, kidney damage and blindness. It's wise to minimize glycation damage and the resulting inflammation as much as possible for good health, and this is exactly what a ketogenic diet does for us.

In contrast to the inflammatory actions of glucose and glycation, the presence of fat derived ketones in the mitochondria, actually inhibits ROS production and provides a sort of defense for the ravages of cellular respiration. Because of the metabolic path they take in the mitochondria, ketones enhance mitochondrial efficiency and reduce oxidative stress. In other words, ketones promote mitochondrial health.

And here is another benefit of ketosis; breaking down fat for fuel also provides a greater amount of ATP energy. When our cells use fatty acids to create energy, they can create more than three times the amount of ATP than they can using glucose alone. So, not only is ROS production reduced, more cellular energy is made and that means more energy overall. People who eat a high fat, low carbohydrate diet have lots of energy, and it stays steady throughout the day.

Using carbohydrates for body fuel is just not efficient. The presence of high amounts of glucose increases glycation and inflammation, ramps up oxidative stress and ROS damage, and creates less energy for cellular and body use. Given that excess glucose can be toxic, and ketones are so beneficial, it makes sense to consider the idea that ketosis is the preferred nutritional state of the human body. Muscles use fatty acids constantly, and research has shown that the heart and brain utilize ketones as a fuel source to a greater extent when carbohydrate intake is minimized.

When your diet is higher in fat and lower in carbohydrates, all body systems work as they were designed and inflammation is reduced. This is why a ketogenic diet has such a positive effect on health markers associated with metabolic syndrome and on more serious disease states such as neurological impairment, cardiovascular disease, cancer, diabetes and epilepsy.

You don't have to avoid all carbohydrate containing foods. There are certain cells in the body that can only use glucose for fuel, so we must have some glucose in the blood stream. The idea is to avoid having too much glucose by minimizing your consumption of concentrated carbohydrates. Fats, protein and green leafy vegetables are better choices as these foods can provide the small amount of glucose needed without causing glycation damage.

In summary, ketogenic diets can have a profound and positive effect on a multitude of health markers and they provide an excellent tool for regaining and maintaining health and well-being, right down to the cellular level. TN

About Ellen Davis:

Ellen Davis is the creator and owner of www.ketogenic-diet-resource.com, a website devoted to sharing information on the health benefits of ketogenic diets. She is an avid supporter of ketogenic diets in all forms, and attributes her devotion to personal experience. She reversed her symptoms of metabolic syndrome, regained excellent health and lost over 80 pounds by switching from the standard American diet to a whole foods ketogenic diet. She also created www.healthy-eating-politics.com, a website devoted to sharing information about the health benefits of whole, nutrient dense foods and dismantling the myth that saturated fat and cholesterol are at the root of heart disease. Ellen lives in Cheyenne, Wyoming, and can be reached via email at ellen.davis.web@gmail.com.

When in doubt, always consult your physician or health care practitioner. This column is to provide you with information to maintain your health.

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