

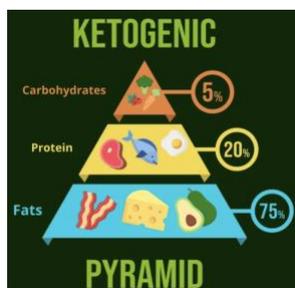
January 2023 Newsletter



MS and the Keto Diet

Making resolutions for the New Year is as traditional as making a champagne toast at midnight. One of the most common aspirations is to lose weight. The [ketogenic diet](#) or “keto” diet (KD) has gained popularity as a way to drop a few pounds quickly without having to exercise. It does this by mimicking the metabolism of [fasting](#). In

fact, the KD was developed as a treatment for epilepsy in the 1920s, after physicians observed that fasting reduced seizure activity. There is also [evidence](#) supporting its role in the treatment of several other neurological diseases, such as Parkinson’s disease, Alzheimer’s disease, migraine headaches and traumatic brain injury. Researchers are looking into the potential benefit this dietary regimen holds for people with MS.



The KD involves eating foods that are high in fat, moderate in protein and low in carbohydrates. According to the [Dietary Guidelines for Americans](#), a healthy diet derives approximately 20 to 35% of daily calories from fat, 10 to 35% from protein, and 45 to 65% from carbohydrate. In contrast, an individual on the KD consumes 70 to 80% of their daily calories from fat, 20 to 25%

from protein, and only 5 to 10% from carbohydrate. Key foods include avocado, full-fat cheeses, heavy cream, butter, whole eggs, [fatty nuts and seeds](#), bacon, beef, fatty fish, [low carbohydrate vegetables](#), and olive oil.

Typically, the body converts carbohydrates into glucose as its preferred source of fuel. However, if a person removes carbohydrate from their diet, their body is starved of glucose and switches to using fats as its source of fuel instead. This process is called [ketosis](#). Ketosis causes the liver to produce ketones (which is where the KD gets its name). These acids build up in the blood and are excreted in the urine. In small amounts, they indicate that the body is breaking down fat. However, high levels of ketones can be harmful, leading to a serious condition called [ketoacidosis](#).



The KD provides therapeutic benefit in neurological diseases through a number of different mechanisms. There is [evidence](#) that ketones have neuroprotective effects. In addition, fat is a richer fuel supply that improves the function of [mitochondria](#), which has been linked to the [survival of nerve fibers](#). High levels of the neurotransmitter, [glutamate](#), are associated with demyelination. There is [evidence](#) that the KD balances glutamate levels in the brain. [Research](#) also shows that ketones trigger a process called [autophagy](#), through which the body breaks down and gets rid of old damaged cells, making room for new healthy ones.

A number of recent studies have looked at the effects of the KD in people with MS. The results are mixed, however many have found it to be beneficial.

Research into the KD and MS

2019 – [Spanish researchers](#) studied 27 people with MS that followed a KD for four months. Results showed it lowered levels of [oxidation](#) and inflammation.

2020 – [Investigators](#) in China and Germany found that mice with the same inflammation of the central nervous system seen in people with MS saw improvement in motor function when fed with a KD. They also saw reductions in damage to the [hippocampus](#) of the brain, which governs memory and other functions and is often adversely affected by MS.

[Researchers](#) at the University of Iowa conducted a small study of 5 people with MS on the KD. Even though participants achieved ketosis on the diet, they saw no improvements in fatigue and brain function.

2021 – Researchers from the University of Miami published a [review](#) showing that people with MS who follow the KD for six months or more show evidence of potentially beneficial changes to their gut microbiome, with increases in healthy bacteria that may provide a neuroprotective effect against the damage caused by MS.

2022 – [German researchers](#) found that people with MS on a modified KD had lower levels of [neurofilament light chain](#) in their blood. This is a type of cell found in the brain and spinal cord that's considered a possible sign of neurodegeneration. Investigators suggest the KD could be used as a possible treatment for progressive MS, in which neurodegeneration is the primary problem.

[Investigators](#) at the University of Virginia, Virginia Commonwealth University and the University of Pennsylvania examined the effects of the KD in 65 people with stable relapsing remitting MS that followed the diet for 6 months. Results suggest that a KD is safe and tolerable for people with relapsing remitting MS over a six-month period. The most common side effects, which were experienced primarily during the first two weeks of the diet, were constipation (43%), diarrhea (18%), nausea (9%), weight gain (9%), fatigue (5%), worsened depression or anxiety (5%), and acne (5%). Body mass index and other measures of body fat decreased significantly over the six-month study despite no change in activity levels. Significant improvements were seen in [EDSS](#), walking and manual dexterity. Results showed a nearly 50% decline in participant-reported depression and fatigue while on the KD. Participants also reported substantial increases in physical and mental quality of life. The researchers state that larger scale studies of the KD in people with MS are needed to confirm these results and warn against following this eating regimen outside of a clinical trial and without medical supervision. It's important to note

that this study was limited to people with stable relapsing remitting MS and results may not be the same for people with active relapsing remitting or progressive MS.

In 2017, German researchers began a [long-term clinical trial](#) on the KD in MS that is ongoing. Results should shed light on the effects of a KD on MS progression.



Did you know that ACP's REAL MS data, collected from members of iConquerMS, has helped researchers gain a better understanding of the effect of a low-carbohydrate diet in people with MS?

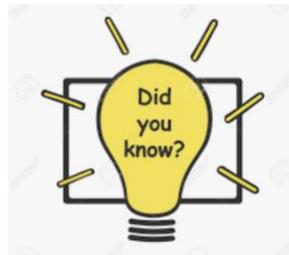
Investigators from Australia looked at wellness and diet data from over 1,100 REAL MS participants and found that a low-carbohydrate diet negatively impacted mental quality of life in people with relapsing remitting MS. Interestingly, they found it had the opposite effect in people with progressive MS. There was no association between a low-carbohydrate diet and physical or social quality of life. Their [conclusions](#) draw a number of interesting associations between other lifestyle behaviors, types of MS and health outcomes and quality of life. You can read more about this and other studies that the iConquerMS community has contributed to on the new [Research Projects](#) page of the iConquerMS website! Not already a member of iConquerMS? Please consider [joining](#) and help us move MS research forward today!

It's important to note that the KD has numerous risks, including low blood pressure, kidney stones, nutrient deficiencies and an increased risk of heart disease. There are also special considerations for people with MS. Ketosis often causes fatigue, which can compound an already significant problem for someone with MS. Changes in mobility and periodic use of steroids may put people with MS at increased risk for [osteoporosis](#). The KD not only limits some calcium sources, it can cause the body to lose calcium, making this more of a concern. Finally, MS can contribute to chronic constipation, which is also a side effect of the KD. As a result, an individual with MS may find bowel difficulties compounded if they choose this dietary regimen.



It's important for people with MS to consult their doctor before making any big changes to their diet. The completed studies into the safety and effectiveness of the KD for people

with MS have been promising, but they are too small to draw broad conclusions. More research needs to be done to confirm these results. The mainstay of ACP's mission is to facilitate research efforts into topics such as these, which have the potential to improve the health and quality of life for people with MS.



iConquerMS offers useful resources to monitor MS symptoms following lifestyle changes. These tools will graph your [REAL MS data](#) along with diary entries of any change in eating habits you've made. Check out the diary function in the iConquerMS portal!

To access the Diary function:



To see how lifestyle changes affect MS symptoms:



All iConquerMS members are invited to participate in REAL MS. Many of the surveys are quick and easy, some taking less than a minute to complete. If you aren't already a member of iConquerMS, please consider [joining](#) this powerful network today! Already a member? Please [log in](#) and complete your open surveys!