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Chris Bollinger  
*Butler University*

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## Low Carb Low Down: Facts About the Fad

Chris Bollinger

**Abstract:** The low carb diet is one of the most popular diets in nutrition. However, different sources will provide varying strategies for achieving a carb diet. The parameters of a typical low carb diet, the positive and negative side effects of the diet, and its practicality should be understood before one begins this diet.

When the words “low carb diet” are typed into Google, 32,400,000 results are generated. The results include websites touting low carbohydrate (LC) diets as the ideal diet for a healthy lifestyle, while others condemn it as ineffective and potentially dangerous. These conflicting viewpoints lead to confusion about what a LC diet consists of and what consequences, both positive and negative, are associated with the diet. Even the medical community maintains varying opinions on LC diets. There are people throughout the media who muddle the information provided to patients by presenting the diet as a fad or having legitimate medical use without comprehending the clinical data. These diets affect an array of people in differing ways and the average person must be aware of both the positive and negative side effects before attempting a LC diet.

Typically, the goal of LC diets is weight loss caused by limiting glucose intake. Glucose is the body’s main fuel source. When blood insulin levels drop due to limited glucose intake, the body is forced to burn fat.<sup>1</sup> In addition, LC diets involve higher protein ingestion, which provides the body with more energy and induces a sustained feeling of satiety.<sup>2</sup> In order to achieve these results, carbohydrate consumption needs to substantially decrease.

The FDA recommends the average person to consume 300 grams of carbohydrates per day in his or her diet.<sup>3</sup> According to Dietitian Kristine Sullivan, the typical LC diet calls for no more than 30-50 grams of carbohydrates per meal, roughly translating to 5% of a person’s daily food consumption (K. Sullivan, MS in dietetics, oral communication, September 26, 2017).<sup>1</sup> However, the number of recommended carbohydrates varies from diet to diet with some LC diets still allowing up to 30% of a patient’s intake to be carbohydrates.<sup>2,5</sup>

Due to the heavy restriction on carbohydrates, those on a LC diet must compensate by consuming increased levels of protein and fat. The exact percentages of these macronutrients vary based on diet plan, but typically the diet is either focused on high-fat content or high-protein content. This translates to 40% of daily energy intake coming from fat for high-fat, LC diets or 25% of energy intake from protein for high-protein, LC diets.<sup>2,5</sup> Regardless of the specific diet plan a LC diet typically consists of high amounts of eggs, meats, and low-starch vegetables.<sup>1</sup> Conversely, fruits, grains, and starchy vegetables are normally excluded from LC diets.<sup>1</sup> Sufficient water intake, including thirteen cups daily for adult men and nine cups daily for adult women, is another

essential part in ensuring any diet success (K. Sullivan, MS in dietetics, oral communication, September 26, 2017).<sup>6</sup>

One of the more popular LC diet plans comes from a Swedish physician, Dr. Andreas Eenfeldt who is the self-proclaimed “diet doctor” and operates a popular LC diet blog.<sup>7</sup> While it should be noted that Dr. Eenfeldt’s website does have a clear bias towards the efficacy of LC diets, his website does lay out what a popular LC meal plan looks like. In the basic meal plan he blogs about his recommendation for egg-based breakfast dishes such as frit-tatas and omelets. Lunches and dinners consist of either fat-heavy or protein-heavy meals featuring chicken, salmon, or beef. All the meals laid out in his diet plan contain less than 15 grams of carbohydrates, which falls under the typical LC recommendation of 30-50 grams of carbohydrates per meal.<sup>1,8</sup>

As with any diet, LC diets have both positive and negative side effects due to their deficiency of one of the macronutrients. A benefit associated with LC diets is quick and rapid weight loss. Patients maintaining a LC diet display an average weight reduction of 6.2 kilograms over a period ranging from 6 months to a year.<sup>4</sup> Similar studies found when compared to other diets, LC diets have a greater effect on short term weight loss.<sup>4,5,8</sup> Additionally, participants saw a decrease in blood pressure.<sup>4</sup> Another study done in 2009 illustrated the effectiveness of LC diets on the lowering of patients’ blood triglyceride levels.<sup>8</sup> LC diets may also aid in the treatment of some chronic illnesses including epilepsy, chronic seizures, and type 2 diabetes. Studies show children diagnosed with epilepsy or chronic seizures see a decrease in the frequency of seizures after implementation of a LC diet.<sup>9</sup> One study found that children on a carbohydrate restricted diet saw an average reduction in epileptic seizures by 38% and some patients experience reductions in seizures of up to 90%.<sup>9</sup> LC diets help type 2 diabetics maintain healthy insulin levels and show potential in normalizing blood glucose levels.<sup>10</sup>

Despite all the benefits and medical uses for LC diets, people who adhere to a LC diet long-term can face negative side effects. One study conducted over two years indicated that LC diets are ineffective in lowering bad cholesterol levels when compared to other diets.<sup>5</sup> This study also illustrated that weight loss in participants on LC diets plateaued after a little over a year. In the end, the LC diets were found to present no significant benefit when compared to more traditional low-fat diets. In addition, the same study found that adherence to the diet decreased significantly over the course of the study. Many patients cited how

they struggled to meet the stringent nutrient requirements of the diet.<sup>5</sup> The previously mentioned study that focused on the diet's effect on epilepsy indicated similar issues with adherence as many participants dropped out before the study concluded.<sup>9</sup>

Sullivan expressed similar opinions and highlighted other issues concerning LC diets. In her experience, she has seen similar problems with compliance to the diet, predominantly due to its restrictive nature (K. Sullivan, MS in dietetics, oral communication, September 26, 2017). Labeling a certain food group as "off-limits" can create a scenario where the person on the diet may crave the restricted food or food group. Sullivan attributes the weight loss on these diets to a loss of water weight, often meaning the weight loss is temporary. The weight loss is also temporary because LC diets negatively impact patients' metabolisms and cause a regain in the weight after terminating the diet. Reaching the daily recommended value of fiber can be another challenge for people on LC diets. Patients remove fiber heavy vegetables and fruits due to the amount of carbohydrates found within them (K. Sullivan, MS in dietetics, oral communication, September 26, 2017).

Depression is another adverse effect associated with the use of LC diets (K. Sullivan, MS in dietetics, oral communication, September 26, 2017).<sup>11</sup> When glucose is consumed, it triggers the body to release serotonin which has a positive effect on an individual's mood. Restricting glucose causes a drop in serotonin and can result in feelings of depression (K. Sullivan, MS in dietetics, oral communication, September 26, 2017).<sup>11</sup>

While depression is a potential harmful side effect of LC diets, so is a condition called ketoacidosis. Ketoacidosis occurs when people on LC diets restrict their carbohydrate intake to less than 20 grams per day while also consuming too much fat. This combination results in the body building up fatty ketones in the bloodstream as a result of low glucose availability. Similar to that of a diabetic episode, symptoms include extremely low blood insulin levels, severe abdominal pain and vomiting.<sup>11,12</sup> These symptoms have shown to subside once the patient begins a more balanced diet regimen; however, the condition can be life-threatening if not resolved.<sup>10,12</sup>

Ultimately, LC diets are neither an ideal everyday diet nor a totally baseless fad. LC diets should not be totally dismissed as they possess medical benefits to those with certain chronic conditions and help with rapid weight loss. However, due to several issues associated with the diet including depression, ketoacidosis, lack of compliance and maintained results, Sullivan expressed her lack of recommendation of LC diets for her patients (K. Sullivan, MS in dietetics, oral communication, September 26, 2017). For the average person trying to lose weight in a healthy and permanent way, a LC diet may bring about fast results, however those results will only last as long as the restrictive diet can be maintained.

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