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High-Carb Shadows: Bringing the Low-Carb Mentality into the Light

The rise of obesity in America has been called an epidemic that has done nothing but cripple the population. From elementary school children to elderly people in nursing homes, obesity has shown no prejudice. According to Atkins, figures released in October 2002 by the *Journal of the American Medical Association* reveal that the number of Americans who are overweight has jumped from 55.9 percent in 1994 to 64.5 percent in 2002. Of those, 30.5 percent are now considered obese (defined as 30 percent or more above a healthy weight), compared to 22.9 percent just eight years earlier (ix). These statistics come off the heels of the U.S. Department of Agriculture's (USDA's) booklet on dietary guidelines, and its ubiquitous Food Guide Pyramid, recommending that fats and oils be eaten "sparingly", while we are to eat six to eleven servings per day of pasta, potatoes, rice, and bread once considered uniquely fattening (Taubes xvii).

With these startling statistics, there have been many different explanations and strategies suggested to curb this overweight/obesity epidemic, with most keeping faith to the officially endorsed low-fat/ high-carb diet that has been put forth by the USDA. One of these most well-known and undeservedly labeled "controversial" strategies is the low-carbohydrate diet. Even with the many skeptics out there regarding the low-carbohydrate diet strategy, the proof of its workability and success is astounding and should be brought back to the nation's consciousness as a solid way of losing weight, keeping it off, staying healthy and living longer.

To understand the low-carbohydrate diet, one must first recognize not only what a carbohydrate is, but also how carbohydrates function inside our bodies. According to *World of Sports Science*, carbohydrates are the substances that will produce the essential fuel for the demands of human movement ("Carbohydrates" 127). Carbohydrates are compounds that consist of carbon, hydrogen, and oxygen, linked together by energy containing bonds. There are two types of carbohydrates: complex and simple. The complex carbohydrates, such as starch and fiber, are classified as polysaccharides. Simple carbohydrates are known as sugars and they are classified as mono or disaccharides, depending on the number of sugars present. Both have four calories per gram, and both are further reduced by the body to glucose (Gourley 435).

Various foods are sources of carbohydrates. Gourley states that carbohydrates come almost exclusively from plants, vegetables, and grains. Milk is the only animal-based product that contains a significant amount of carbohydrate (435). Within these foods are varying amounts of carbohydrates. As a general nutrition guideline, approximately from 60-65% of a healthy adult's caloric intake should be derived from carbohydrates ("Carbohydrates" 127).

Within several diets, you may see the reference to either "good carbs" or "bad carbs". *World of Sports Science* assures these descriptions are not a reflection on the chemistry of the particular carbohydrate being ingested as carbohydrates have a well-defined molecular structure. Good carbohydrates are generally those derived from whole, primarily unprocessed foods such as grains and vegetables. The so-called bad carbohydrates are those ingested through sugared, processed foods and snack foods, which have no nutritional value other than as a mediocre energy source. Excess carbohydrates, those that cannot be processed for immediate use in the bloodstream, or stored in the muscles or liver as glycogen, will be stored by the body as fat ("Carbohydrates" 128).

With excess glucose, from the excess ingestion of carbohydrates, being turned into glycogen, and an excess of glycogen being stored as fat by the body, you can see where a low-fat, high-carbohydrate diet can cause weight gain. This is where a low-carbohydrate diet can be considered a valuable treatment to not only overweight and obesity, but also another major ailment that has come out of the low-fat, high-carbohydrate diet sentiment: type II diabetes. But what does a low-carbohydrate diet actually entail?

Nurmi explains that low-carbohydrate diets can vary in the number of grams of carbohydrates to be consumed each day. Most plans include three or more phases or stages. The earliest stages allow the fewest grams of carbohydrate to be eaten per day and typically last for two weeks. The middle stage is the weight loss stage and the carbohydrate grams may be slightly increased and then maintained at that level until the desired weight loss has been achieved. During the final phases, carbohydrates are gradually increased until weight loss stops or weight gain begins. At this point, the dieter reduces the amount of carbohydrates consumed until weight has stabilized (517).

Nurmi also states that many low-carbohydrate diets recognize that not all carbohydrates are bad. Some carbohydrates digest more slowly than others, causing a gradual rise in blood sugar after eating. Researchers have developed a glycemic index to rank carbohydrates and other foods according to the effect they have on blood sugar. It is called the glycemic index because the term “gylcemia” refers to the presence of glucose or sugar in the blood. The glycemic index is a scale of 0-100. Foods with higher glycemic index ratings break down quickly and cause a sharp spike in blood sugar. When blood sugar rises quickly, the body produces a surge of insulin to lower the amount of glucose in the blood. Insulin is a hormone that helps the body take sugar (glucose) out of the bloodstream and out it into cells, where it can be used for energy or stored in

fat. Foods with lower glycemic ratings break down more slowly. They cause a more gradual rise in blood sugar, which means less insulin will be needed. Lower blood sugar and insulin levels have been shown to prevent or treat type II diabetes and heart disease. They have also been shown to improve weight loss (518). Foods high on the glycemic index include white breads, rice, and potatoes. Foods that are in the middle of the scale are whole grain pastas and breads and many fruits. Nuts, beans and green vegetables are on the low-end of the scale.

In the mid-1970s, Gerald Reaven initiated the study of glycemic index to test what he called the "traditionally held tenet" that simple carbohydrates are easier to digest than more complex carbohydrates "and that they therefore produce a greater and faster rise" in blood sugar and insulin after a meal. It was taken up a few years later by David Jenkins and his student Thomas Wolever, both of whom were then at Oxford University. One important implication of Jenkins and Wolever's glycemic-index research is that it provided support for Cleave's speculation on the saccharine disease. The more refined the carbohydrates, the greater the blood sugar and insulin response. Anything that increases the speed of digestion of carbohydrates – polishing rice, for instance, refining wheat, mashing potatoes and particularly drinking simple carbohydrates in any liquid form, whether a soda or a fruit juice – will increase the glycemic response. Thus, the addition of refined carbohydrates to traditional diets of fibrous vegetables or meat and milk, or even fish and coconuts, could be expected to elevate blood-sugar and insulin levels in the population. And this would conceivably explain the appearance of atherosclerosis and diabetes as diseases of civilization (Taubes 196).

The low-carbohydrate diet is much more than a "fad" diet or a sweeping new phenomenon. The earliest recognized publication of a high-fat/low-carb diet was William Banting's *Letter on Corpulence*, published in 1863, in which Banting reported weight loss and

improved health by following a low-carbohydrate diet prescribed by his doctor, William Harvey. Banting suffered from obesity and hearing loss caused by fat compressing his inner ear (Nurmi 517). He ate three meals a day of meat, fish, or game, usually five or six ounces at a meal, with an ounce or two of stale toast or cooked fruit on the side. He had his evening tea with a few more ounces of fruit or toast. He scrupulously avoided any other food that might contain either sugar or starch, in particular bread, milk, beer, sweets, and potatoes (Taubes x). Banting managed to lose fifty pounds on this low-carbohydrate regimen which not only led to him writing his 16 page pamphlet, but he managed to reverse his hearing impairment thanks to his weight loss.

Just as low-carbohydrate diets are criticized today, Banting received similar opposition. Taubes says correspondents to the *British Medical Journal* seemed occasionally open-minded, albeit suitably skeptical and a formal paper was presented on the efficacy and safety of Banting's diet at the 1864 meeting of the British Medical Association. But some did what members of established societies often do when confronted with a radical new concept: they attacked both the message and the messenger (x). And just as some authors of current popular low-carbohydrate diets are criticized for these diets being nothing new and potentially dangerous, William Banting got the same critiques. Banting's diet plays a pivotal role in the science of obesity – and in fact, chronic disease – for two reasons. First, if the diet worked, if it actually helped people lose weight safely and keep it off, then that is worth knowing. More important, knowing whether "the sugary and starchy elements of food" are "really the chief cause of undue corpulence" is as vital to the public health as knowing, for example, that cigarettes cause lung cancer, or that HIV causes AIDS (Taubes xii).

The author of what could be considered one of the most popular and well recognized low-carbohydrate diets, Robert Atkins, MD, also knew and felt the criticism and skepticism that

William Banting experienced with his diet book. His book, *Dr. Atkins' Diet Revolution* was first published in 1970 and has sold millions of copies. The latest revision is heavily referenced, thus ending frequent criticisms that his diet theories have no scientific basis (Byrnes 100). With the Atkins diet, Atkins assures that you don't count calories, nor do you deprive yourself of a variety of wholesome foods. Instead, you enjoy great, low-carb food in satisfying portions (6).

Atkins divides his low-carbohydrate diet plan between 4 phases. The first phase called Induction, suggested by Atkins, to get your weight-loss program off to a fast start, you limit your carbohydrate intake to just 20 grams of Net Carbs a day for a minimum of two weeks. Net Carbs are the only carbs that have a noted impact on blood sugar. During this time, you satisfy your appetite with fish, poultry, eggs, beef, and other foods high in protein and good fats, such as olive oil. You may also eat 3 cups of salad greens (dressed with your favorite low carb dressing) or 2 cups of salad and a cup of fresh, non-starchy veggies such as broccoli or zucchini each day (5).

In the second phase, called Ongoing Weight Loss by Atkins, you continue to eat high-quality protein and fat, along with your salad greens and vegetables. Week by week, you add back nutrient-rich carbohydrates such as more veggies, cheese, berries, nuts, and seeds. You do this by adding just 5 grams of Net Carbs per day in weekly increments until weight loss ceases. So you go from 20 to 25 grams per day one week, then to 30 grams daily the next week, and so forth. Once you stop losing weight, drop back 5 grams and you've then discovered the amount of carbs you can eat while still losing weight. For most people, that amount is somewhere between 40 and 60 grams daily. Continue until you are within 5 to 10 pounds of your goal weight (5).

The third phase, known as Pre-Maintenance, Atkins wants you to slow your weight loss to an almost imperceptible rate so that your good eating habits become ingrained. Each week in

phase 3 you will add another 10 grams of daily Net Carbs, or 20 to 30 grams of nutrient-dense foods twice a week, to your program so long as you continue to lose. If your weight loss stops, cut back 5 or 10 grams until you resume gradual weight loss. This is your revised level for carb consumption, at which you will continue until you reach your target (5).

Once you achieve your goal weight, Atkins insists you can start enjoying an even wider range of delicious foods in phase 4, called Lifetime Maintenance. You will still need to keep an eye on your carb intake. Just skip the junk food and use your carb grams on nutrient-rich foods such as whole, unrefined grains and a variety of fruits and vegetables. Most people find that they can maintain their weight by consuming somewhere between 45 and 100 grams of Net Carbs a day. Someone who is fit and exercises an hour or more daily may be able to go even higher. This individualized number is your Atkins Carbohydrate Equilibrium (ACE), the number of grams of Net Carbs you can eat without gaining or losing weight. This is your equilibrium zone in which you'll maintain your weight effortlessly while eating a satisfying, healthful diet (6).

Byrnes further explains how weight loss happens on the Atkins diet, saying that it induces ketosis in the body, a condition where the body breaks down fat instead of glucose for energy, resulting in weight loss (100). Ketosis is one of the biggest complaints many medical professionals have with low-carbohydrate diets in general, and is not exclusive to the Atkins diet alone. In fact, this is how other low-carbohydrate diets, such as the Eat Fat Get Thin diet, the Carbohydrate Addict's diet, and the South Beach diet, also attain their weight loss through their own respective plans.

As mentioned, medical professionals believe ketosis is a bad state for your body to be in. But is it? Cotunga, Tapper-Gardzina, and Vickery state ketosis provides a starvation defense mechanism, providing ketone bodies for energy. Heart and muscle tissues use ketones for fuel to

spare the limited glucose supply needed for brain function (56). It is claimed that this state is harmful and can lead to metabolic acidosis and death. While it is true ketosis occurs in people who are starving to death as the body struggles to find fuel sources, it should be obvious that starving people and low-carb people are not in the same situation as the latter have abundant access to food, while the former do not. Diabetics can also enter a state called ketoacidosis, but this condition results from out of control blood sugar levels brought on by excessive carbohydrate intake. Again, this situation is not analogous to those following a low-carb diet (Byrnes 103).

Another argument against low-carbohydrate diets is that most of the initial weight loss is just water weight and can cause dehydration. Volek and Westman used dual-energy x-ray absorptiometry to examine the change in body composition in subjects who switched from their habitual diet (48% carbohydrate, 32% fat) to a very-low-carbohydrate diet (8% carbohydrate, 61% fat) for 6 weeks. Surprisingly, fat mass decreased significantly (-3.3 kg) and lean body mass increased significantly (+1.1 kg), despite no change in physical activity. There were no changes in the control group. These results suggest that low-carbohydrate diet favors loss of fat, Water weight may account for some of the initial rapid weight loss, but it appears that fat loss accelerates and lean tissue is preserved over longer periods (856). This suggests that there is no link to chronic dehydration in a low-carbohydrate diet and the only thing that occurs is fat loss, which is what any low-carb dieter is looking for.

The potential causing of heart disease surrounding the following of a low-carbohydrate diet is a hot-button issue as well. According to Cotunga, Tapper-Gardzina, and Vickery, in a computer analysis comparing eight popular diets and their meal plans, researchers found that the Atkins diet had the highest level of total fat, saturated fat, and cholesterol. They say consuming a

high-fat diet, which is another term for a low-carbohydrate diet, especially one that's high in saturated fat, raises total and low-density lipoprotein (LDL) cholesterol levels, which are both risk factors for coronary artery disease. A study they use within "Should You Recommend a Low-Carb, High-Protein Diet?" shows the progression of coronary artery disease in 10 subjects who consumed a high-protein diet for 1 year. The high-protein group showed worsened total cholesterol, LDL, high-density lipoprotein, triglycerides, lipoprotein (a), and fibrinogen levels. The author of the study concluded that low-carbohydrate influences the lipid profile, which is associated with the progression of coronary artery disease (55).

Other studies show otherwise. Volek and Westman counter the data from Cotunga, Tapper-Gardzina, and Vickery, with their examination on the effects of a 6 week very-low-carbohydrate diet on fasting and postprandial serum lipid levels in healthy, normal-weight, normolipemic men who switched from their habitual diet (17% protein, 47% carbohydrate, 32% fat) to a very-low-carbohydrate diet (30% protein, 8% carbohydrate, 61% fat). They found a significant decrease in fasting serum triglycerides (-33%), postprandial lipemia after a fat-rich meal (-29%), and fasting serum insulin concentrations (-34%). Fasting serum and LDL cholesterol and oxidized LDL were unaffected, and HDL cholesterol tended to be increased (+11.5%). These findings suggest that a very-low-carbohydrate diet does not have a deleterious effect of the cardiovascular risk profile in the short term and may improve the lipid disorders characteristic of atherogenic dyslipidemia (857).

With a low-carbohydrate diet involving a higher intake of protein, the benefits of bone health are a positive aspect. According to Crowe, these diets have been hypothesized to contribute to osteoporosis risk. Low-carbohydrate diets have the potential to generate a subclinical chronic metabolic acidosis (via the presence of ketone bodies in blood), which can

then promote calcium mobilization from bone. Crowe theorizes that the conflicting reports on the effect of animal protein on bone health could partly result from difference in participant ages, as the epidemiological study used by Crowe had over 900 adults showing no negative effect of consumption of animal protein on bone mineral density (241).

Low-carbohydrate diets have also shown themselves to be a viable option, not only for overweight, obese or diabetic people, but athletes and their body composition as well. Forsythe, Quann, and Volek claim about one-quarter of the weight loss achieved through typical low-fat diet approaches is from lean body mass. They examined the effects of very low-carbohydrate diets on body composition in normal-weight men. Twelve healthy normal-weight men switched from their habitual diet (48% carbohydrate) to a ketogenic diet 12% carbohydrate) for 6 weeks, and 8 men served as controls consuming their normal diet. Fat mass, assessed by dual energy x-ray absorptiometry was significantly decreased (-3.4 kg) and lean body mass significantly increased (1.1 kg) after the ketogenic diet. There was a significant decrease in serum insulin (-34%), and 70% of the variability in fat loss on the ketogenic diet was accounted for by the decrease in serum insulin concentrations (43).

For more than 3 decades, official recommendations have emphasized reduced total fat, saturated fat, and cholesterol intake as the primary method to achieve and maintain a healthy body weight. The best estimates of nutrient intake in the United States indicate that percent fat intake has declined over the past 3 decades, with a concomitant increase in carbohydrate intake. During this time, obesity and diabetes rates have increased and heart disease remains the leading cause of death in most industrialized countries (Forsythe, Quann, and Volek 44).

A low-carbohydrate diet, or better yet, a low-carbohydrate mentality, has more than shown its merits as a suitable and effective way of losing weight. From improving cardiovascular

health to body composition, the low-carbohydrate mentality can bring much positivity into your world. This way of dieting has proven itself so much so, that new guidance from the American Diabetes Association gives a green light to the use of low-carbohydrate diets as a weight-control measure for patients with diabetes (Tucker 14).

People who have already lived the positive effects of these diets are not just speaking out about its benefits; other people are paying attention and noticing in those dieters the visual benefit the low-carbohydrate diet has to offer as well. An online survey presented by the Valen Group revealed that among adults who are not currently on a low-carb diet, nearly 20% would consider trying one within the following year primarily because they have seen demonstrated success. The Valen Group CEO, Stuart Rabkin, noted that low-carb consumers follow other healthy lifestyle practices, exercise more than the average American and 83% of them monitor the quantity of food they eat (“To Carb” 903). So what is the rest of the world waiting for? Let the light shine on the low-carbohydrate diet and mentality, and push the bread off the table into the dark side.

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