

Fad Diets and Obesity – Part III: A Rapid Review of Some of the More Popular Low-Carbohydrate Diets

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It is difficult to argue with the observation that low-carbohydrate diets have become popular. However, what is actually involved or allowed or not allowed with some of the more popular diets? In part II of this series (Moyad, 2004), there was a discussion of the glycemic index (GI), which serves as the main theory behind the effectiveness of these diets. A rapid review of some of the most popular low-carbohydrate diets are included in this article to better educate the health professional and patient, regardless of whether or not someone advocates or discourages the use of these diets.

Atkins® Diet (Low-Glycemic Index Diet)

First, health care professionals should understand the concept of *net carbohydrates* when it comes to the Atkins diet (Atkins 2002, 2004). This concept will help guide individuals through this diet. Net carbohydrates are the total carbohydrate content of a food or beverage minus or subtracting its fiber content. There are four stages to the traditional

Low-carbohydrate books continue to be some of the biggest selling publications in the United States. However, what are the similarities and differences between some of the most popular books? This overview of what some of these books advocate or discourage is important to better facilitate the discussion between the health professional and the patient interested in some of these methods. Regardless of the low-carbohydrate diet discussed with patients and whether or not health professionals agree or disagree with this approach, it is imperative that health professionals at least learn the basics of some of the more popular diets to facilitate better communication between the practitioner and patient.

Atkins diet: induction, ongoing weight loss, pre-maintenance, and lifetime maintenance. *Induction* is a 14-day crash course to enter ketosis by limiting intake to 20 grams of net carbohydrates a day. Table 1 is a brief summary of the foods and beverages encouraged and discouraged during the induction phase of the Atkins diet (Atkins, 2002, 2004).

The next stage is *ongoing weight loss* (Atkins 2002, 2004), which can last from 2 weeks to 2 months. During this time, consumption of carbohydrates is increased gradually, by approximately 5 grams of net carbohydrates per day (5 grams = 15 almonds, 6 asparagus spears, or a half a cup of tomato juice), until the dieter discovers the maximum level he/she can eat while continuing to lose weight. When weight loss ceases, the dieter has reached his/her maximum and it is time to reduce carbohydrates again.

When the dieter is 5 to 10 pounds away from ideal body weight, he/she is now in the *pre-maintenance* stage (Atkins 2002, 2004). This can last a few weeks or a few months. Now, weight can be lost more slowly (less than 1 pound per week). This is the time to learn what exceptions to make in the diet.

Once ideal weight is reached, the dieter can go on a *lifetime maintenance* diet or phase (Atkins 2002, 2004). The tough part here is to find the highest number of grams of carbohydrate that can be eaten without gaining weight back. This is probably between 40 to 60 grams of *net* carbohydrates per day, depending on the dieter's metabolism.

South Beach® Diet (Low-Glycemic Index Diet)

This diet is the newest to sweep the country. It occurs in three phases (Agatston, 2003, 2004). The purpose of Phase 1 is

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Table 1.
Foods Encouraged and Discouraged During the Induction Phase
(Total Time = 14 Days) of the Atkins® Diet

Artificial Sweeteners

Encouraged: Sucralose (Splenda®), saccharin (Sweet 'N Low®), acesulfame-K (Sweet One®).

Discouraged: Most chewing gum, breath mints, cough syrups, and cough drops; be careful of the words "sugarless," "sugar-free," or "no sugar added;" pay attention to carbohydrate counts.

Beverages

Encouraged: Minimum of 8 eight-ounce glasses of water/day (including filtered, mineral, spring, and tap water). Other added beverages only when also consuming 64 ounces of water/day include: decaffeinated coffee/tea, diet soda with one of the above artificial sweeteners (not more than 3/day), no calorie essence-flavored seltzer, herbal tea without added fruit sugar or barley, clear broth/bouillon, club soda.

Discouraged: Coffee substitutes made from grains, alcoholic beverages, caffeinated cola drinks, fruit or vegetable juices.

Cheeses and Other Dairy

Encouraged: 3 to 4 ounces/day of full-fat, firm, soft, and semi-soft aged cheeses (cheddar, Swiss, Gouda, goat, mozzarella, bleu); full-fat cream cheese, soy, or rice cheese; butter (unlimited intake); 2 to 4 ounces of light or heavy cream or sour cream.

Discouraged: Cottage cheese, farmer cheese, ricotta cheese, other fresh cheeses (not aged), reduced-fat or low-calorie cheeses, processed cheeses such as cheese spreads.

Condiments

Encouraged: Caponata (eggplant relish), mayonnaise (regular, not low fat), mustard (not honey mustard), horseradish, pesto (after 2 weeks of induction), pickles (not bread and butter or other sweet pickles), soy sauce (tamari, others without wheat), sauces such as ketchup.

Discouraged: Barbecue sauce, ketchup with added sugar, pickle relish, Russian dressing, cranberry sauce, steak sauce, packaged gravies, and any sauce with added sugar.

Garnishes

Encouraged: Crumpled crisp bacon (nitrate-free), grated cheese, minced hard-boiled egg, sautéed mushrooms, spices and herbs (without added sugar), sliced/chopped onion.

Miscellaneous

Encouraged: Eggs, fish, meat, poultry, shellfish.

Discouraged: More than 4 ounces a day of oysters and mussels, processed meats (ham, bacon, pepperoni, salami, hot dogs), some cured fish (sugars or fillers), meat and fish cured with nitrates (carcinogens), imitation or partial imitation products (crabmeat, fish sticks), meatloaf, breaded foods; do not consume more than 4 ounces of organ meats a day.

Oils

Encouraged: Any type of oil, especially cold-pressed or expeller-pressed, olive oil or butter, margarine-like spreads made of vegetable oils and without trans fat.

Salad Dressings

Encouraged: Oil and vinegar, dressings without sugar or corn syrup (no more than 2 grams of net carbohydrates per serving).

Discouraged: Balsamic vinegar (has added sugar), rice vinegar (with added sugar), dressings with added sugar or corn syrup.

Special Category Foods

Encouraged: 10 to 20 olives/day, half an avocado/day, 2 to 3 tablespoons of lemon juice or lime juice/day, 1 ounce of nuts and seeds/day (only if your induction is greater than 2 weeks).

Vegetables (Cooked): 1 Cup per Day (If Salad, Not More Than 2 Cups)

Encouraged: Artichoke (and hearts), asparagus, bamboo shoots, bean sprouts, beet greens, bok choy, broccoli (and rabe), brussels sprouts, cabbage, cauliflower, celery root, chard, collard greens, dandelion greens, eggplant, hearts of palm, kale, kohlrabi, leeks, okra, pumpkin, rhubarb, sauerkraut, snow peas, spaghetti squash, string or wax beans, summer squash, tomato, turnips, water chestnuts, zucchini, or summer squash.

Vegetables (Raw): 2 to 3 Cups per Day

Encouraged: Alfalfa sprouts, arugula, cabbage, celery, chicory, chives, cucumber, daikon, endive, escarole, fennel, jicama, lettuce (all types), mache, mushrooms, parsley, peppers, radicchio, radishes, romaine, scallions, sorrel, spinach, tomato, watercress, or any other leafy green vegetables.

to eliminate cravings. This is accomplished by eliminating all starches including all breads, potatoes, rice, and all sugars, including all fruits and alcoholic beverages. During Phase 1, high-nutrient vegetables and snacks are promoted. The South Beach Diet author says that you can "expect to lose between 7 and 13

pounds during Phase 1," which lasts 2 weeks. Table 2 offers a brief summary of the foods and beverages encouraged and discouraged during Phase I of the South Beach Diet (Agatston, 2003, 2004).

In Phase 2 of the diet, individuals are told to gradually add the so-called "good carbohy-

drates," such as whole grains and whole fruits (Agatston, 2003, 2004). Also, the author encourages a glass of red or white wine with a meal, which may actually help "slow digestion."

Once an individual has reached his/her weight loss goal, it is time for Phase 3, or the *maintenance phase* (Agatston, 2003,

Table 2.
Foods Encouraged and Discouraged During Phase 1
(Total Time = 2 Weeks) of the South Beach® Diet

<p>Alcohol <i>Discouraged:</i> Alcohol of any kind.</p> <p>Beef <i>Encouraged:</i> Lean cuts, for example: sirloin (including ground), tenderloin, top round. <i>Discouraged:</i> Brisket, liver, other fatty cuts, rib steaks.</p> <p>Cheese (Fat-Free or Low-Fat Encouraged) <i>Encouraged:</i> American, cheddar, cottage cheese (1%, 2%, or fat-free), cream cheese substitute, dairy-free, feta, mozzarella, Parmesan, provolone, ricotta, string. <i>Discouraged:</i> Brie, edam, nonreduced fat.</p> <p>Dairy <i>Encouraged:</i> Low-fat or fat-free milk or soy milk, plain or sugar-free low-fat or fat-free yogurt. <i>Discouraged:</i> All full-fat dairy (ice cream, milk, soy milk, yogurt (cup and frozen).</p> <p>Eggs <i>Encouraged:</i> Whole eggs are not to be limited unless your doctor advises; use egg whites and egg substitute as needed.</p> <p>Fats Canola and olive oil.</p> <p>Fruits and Fruit Juices (Avoid All of Them) <i>Discouraged:</i> Avoid all fruits and fruit juices in Phase 1.</p> <p>Lunchmeat Fat-free or low-fat only.</p> <p>Nuts <i>Encouraged:</i> Almonds (15/day), macadamias (15/day), peanuts (20 small/day), peanut butter (1 tablespoon/day), pistachios (30/day).</p> <p>Pork <i>Encouraged:</i> Boiled ham, Canadian bacon, tenderloin. <i>Discouraged:</i> Honey-baked ham.</p>	<p>Poultry (Skinless Encouraged) <i>Encouraged:</i> Cornish hen, turkey bacon (2 slices/day), turkey and chicken breast. <i>Discouraged:</i> Chicken (wings and legs), duck, goose, poultry products (processed).</p> <p>Seafood <i>Encouraged:</i> All types of fish and shellfish.</p> <p>Spices and Seasonings <i>Encouraged:</i> All spices with no added sugar, broth, extracts (almond, vanilla, or others), horseradish sauce, I Can't Believe It's Not Butter® (spray), pepper (black, cayenne, red, white).</p> <p>Starches and Carbs <i>Discouraged:</i> Avoid all starchy foods including: breads (all types), cereal, matzo, oatmeal, rice (all types), pasta (all types), pastry, and baked goods (all types).</p> <p>Sweet Treats (Limit to 75 Calories/day) <i>Encouraged:</i> Candies (hard, sugar-free), chocolate powder (no added sugar), cocoa powder (baking type), fudge pops (sugar-free), gelatin (sugar-free), gum (sugar-free), popsicles (sugar-free), sugar substitute.</p> <p>Tofu <i>Encouraged:</i> Use soft, low-fat, or lite varieties.</p> <p>Vegetables and Legumes <i>Encouraged:</i> Artichoke, asparagus, beans (black, butter, chickpeas, green, Italian, kidney, lentils, lima, pigeon, soy, split peas, wax), broccoli, cabbage, cauliflower, celery, collard greens, cucumbers, eggplant, lettuce (all varieties), mushrooms (all varieties), snow peas, spinach, sprouts (alfalfa), water chestnuts, zucchini. <i>Discouraged:</i> Beets, corn, potatoes (sweet or white), yams.</p>
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2004). There are no real restrictions here because at this point the dieter is supposed to be knowledgeable enough to make the right decisions. For example, brown rice instead of white rice, pita bread and not white bread, and sweet potatoes instead of white potatoes. Additionally, this diet reminds individuals to follow the glycemic index and to think of the GI in three ranges: low = 55 and below, medium = 56 to 69, and high = 70 and above. The South Beach Diet recommends eating foods in the low GI range and the low glycemic load or GL range.

Zone® Diet (Low-Glycemic Index Diet)

This diet, developed by Barry Sears, allows dieters to enter the *Zone* when they figure out how many grams of protein their body needs daily (Sears & Lawren, 1995). Protein intake is spread over three meals and two snacks, never allowing going more than 5 hours during the day without eating. A good balance of carbohydrates and protein is recommended. The ideal protein-to-carbohydrate ratio is 0.75, which basically means if eating 7.5 grams of protein at one meal, 10 grams of car-

bohydrate should also be consumed. To simplify this math, Dr. Sears converts everything into macronutrient "blocks:" 1 protein block = 7 grams, 1 carbohydrate block = 9 grams, and 1 fat block=1.5 grams. It is recommended to eat the same number of blocks of protein, carbohydrates, and fat at each meal and snack; this allows the ideal ratio to be maintained. If, for example, if the dieter's body needs 3 blocks of protein at breakfast, then she would also eat 3 carbohydrate and 3 fat blocks. Sears lists typical macronutrient blocks to assist in

constructing *Zone*-favorable meals. For example, 1 block of protein equals about 1 ounce of skinless chicken or turkey breast, 2 egg whites, 1 ounce of tuna, 1/4 cup of low-fat cottage cheese, or a 1/3 of an ounce of protein powder. One block of carbohydrate could be equivalent to 1 cup of cooked broccoli or zucchini, a tossed salad, a peach, 1/2 an orange or apple, or a 1/4 of a cantaloupe. One block of fat is equal to a teaspoon of olive oil and vinegar dressing, 1/2 a teaspoon of almond butter or natural peanut butter, 1 macadamia nut, 3 olives, or 1/2 a tablespoon of guacamole.

If the math involved with blocks is confusing, the dieter can attempt to grossly eyeball portions using the palm of the hand as a measurement (Sears & Lawren, 1995). The amount of protein held in the hand equals 4 blocks. To eyeball carbohydrates, the amount should be about twice as much as the size of the protein portion. The dieter can also add a little fat, such as a little salad dressing or a few olives. Also, Sears emphasizes that no more than 500 calories per meal or 100 calories per snack should be eaten, which adds up to no more than 1,700 calories a day.

The timing of meals is also important (Sears & Lawren, 1995). An individual who eats breakfast at 7 am should have her next meal no later than noon. A later afternoon snack will keep the dieter in the *Zone* until dinner at 7 pm, and a snack before bed will keep her sleeping in the *Zone* until it is time for breakfast.

Sears generally recommends only low-fat protein; fiber-rich carbohydrates such as spinach, green beans, blueberries, and apples; and monounsaturated fat (Sears & Lawren, 1995). Bad carbohydrates include carrots, corn, peas, potatoes, sweet potatoes, bananas, raisins, prunes, papayas, all fruit juices (their fiber has been removed, and fiber reduces the speed at which food enters the bloodstream), most grains and breads, ice cream, granulated sugar, honey, and jelly. Also, Sears is a big fan of vitamin E supple-

ments at 200 IU daily, because his diet supplies all the micronutrients except this one.

Again, this diet requires calculations. First, the individual daily protein requirement must be determined, which depends on the dieter's weight, level of physical activity, and percentage of body fat. Sears provides worksheets for determining percent body fat, and the dieter will also need a scale and tape measure. Once the protein requirement is discovered, the amount of carbohydrate to be eaten can be determined. The more carbohydrates eaten, the harder it is to lose weight. To lose fat, more fat must be ingested (Sears & Lawren, 1995). To enter the *Zone* of permanent weight loss, food must be eaten "in a controlled fashion and in the proper proportions — as if it were an intravenous drip." This means reducing carbohydrate intake to approximately 40% of total calories (USDA recommends 60%), making up the loss by doubling the standard protein amount to 30%, and getting 30% from fat (the USDA maximum), mostly from mono-unsaturated fat sources. Sears calls this concept the 40-30-30 diet. Finally, it is important to realize that Sears classifies the bad carbohydrates as the ones that have a high glycemic index.

Conclusion

A discussion of some of the more popular non-low-carbohydrate diets and some recent clinical research that supports and refutes these methods will be included in Part IV of this series. In the meantime, it seems imperative to at least discuss some of the basic concepts of the more popular low-carbohydrate diets. Health professionals should be better equipped to discuss the methods or principles involved with low-carbohydrate diets after reading this article. If a greater overview of these diets are needed, the health professional should refer to the specific low-carbohydrate book in question. Regardless, knowing the low-carbohydrate vernacular seems more important than ever because patients will inquire about these diets. ■

References

- Agatston, A. (2004). *The South Beach® diet: Good fats good carbs guide*. New York: Rodale Press.
- Agatston, A. (2003). *The South Beach® diet*. New York: Rodale Press.
- Atkins, R.C. (2004). *The Atkins® essentials*. New York: Harper Collins Publishers.
- Atkins, R.C. (2002). *Dr. Atkins new diet revolution*. New York: Harper Collins Publishers.
- Moyad, M. (2004). Fad diets and obesity — part II: An introduction to the theory behind low-carbohydrate diets. *Urologic Nursing*, 24(3), 210-213.
- Sears, B., & Lawren B. (1995). *The Zone®*. New York: Harper Collins Publishing.

When evaluating some of the most popular low-carbohydrate diets on the market, a common thread emerges: the insulin-obesity connection. Insulin is a hormone that allows for the uptake of glucose (digested carbohydrate) into the cells for energy. Proponents of these diets suggest a connection between high-circulating levels of insulin in the blood and the "unavoidable" storage of glucose as fat in the body. In contrast to the low-carbohydrate diet theory, there is ample evidence of the health benefits of diets rich in fruits, vegetables and whole grains, and low in saturated and trans fat. (5-7) There is a need to differentiate between refined carbohydrates and fiber-containing, nutrient-dense, low-calorie fruits, vegetables and whole grains.