

FAST CARBS, SLOW CARBS

The Simple Truth About Food,
Weight, and Disease

David A. Kessler, MD

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Recommendation: to avoid metabolic harm, reduce or eliminate fast carbs for good

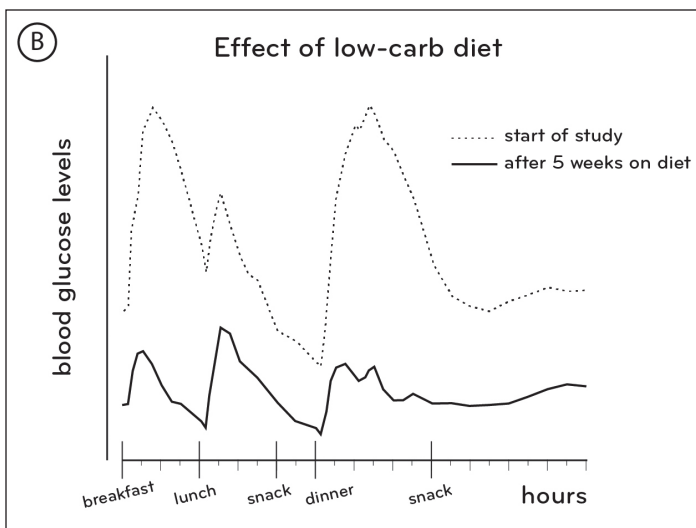
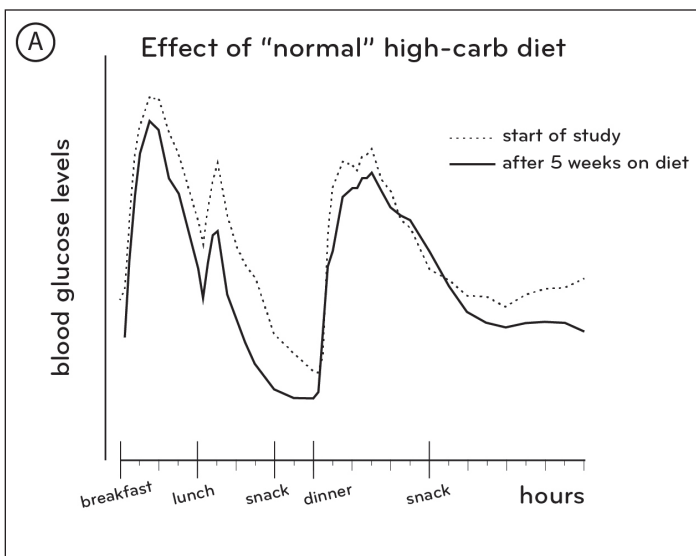
Several studies link diet to metabolic challenges. In one, conducted by researchers Drs. Mary C. Gannon and Frank Q. Nuttall, who have done seminal work at the University of Minnesota, subjects with mild but untreated type 2 diabetes were placed either on a high-protein, low-carbohydrate diet or a control diet high in carbohydrates. The ratios of macronutrients in the two studies were almost mirror images of each other: the high-protein diet was 20 percent carbs, 30 percent protein, and 50 percent fat, while the control diet was 55 percent carbs, 15 percent protein, and 30 percent fat.

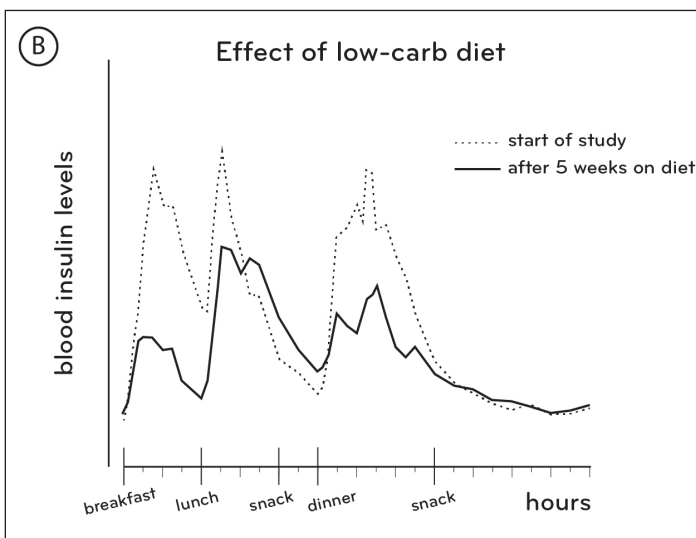
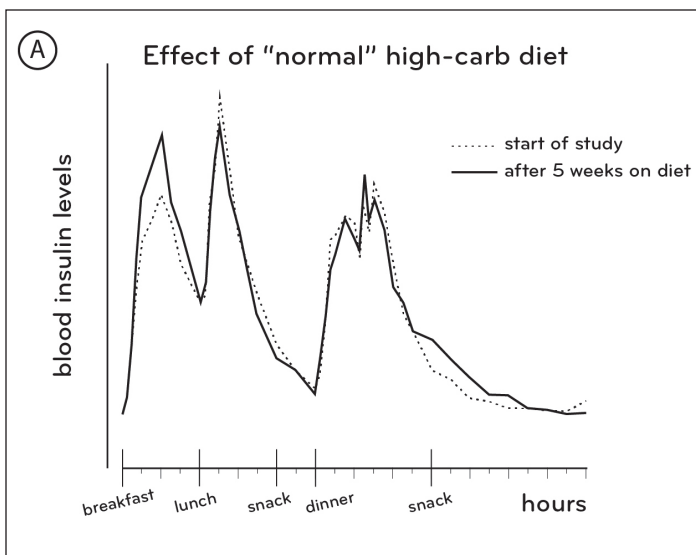
Neither diet was designed to help the subjects lose weight, although those on the low-carb diet did lose a couple of pounds, on average. Instead, the researchers were interested in the effects of the two different meal plans on blood glucose levels. Distinct results were evident: participants on the high-protein, low-carb diet saw their glucose levels drop significantly, while those on the control diet saw no change. In addition, on the low-carb diet, people did not experience large spikes in glucose throughout the day.

Below you will see two sets of graphs from that study. Both track the blood glucose levels for participants over twenty-four hours. Graph A reflects the data from participants on the control high-carb diet, and Graph B illustrates those on the low-carb diet. In both graphs, the dotted lines indicate the levels at the start of the study, and the solid lines show the levels after five weeks.

In the control group, there is essentially no significant change to the participants' blood glucose levels over the duration of the study—but their blood glucose does spike three times during the day, presumably after meals. In the low-carb group we see a dramatic difference in glucose levels before and after initiating the low-carb diet. The “before” data show the same spikes as in the control group. But after five weeks, the average participant's glucose level is lower throughout the day, with only slight increases occurring episodically.

The next two graphs measure the levels of insulin in the participants' blood. Once again, the subjects on the control diet show no difference before and after five weeks, as Graph A illustrates. But in Graph B, we clearly see that after five weeks on a low-carb diet, the subjects' insulin levels do not reach the same peaks as they did previously. On average, their insulin production fell by 25 percent.





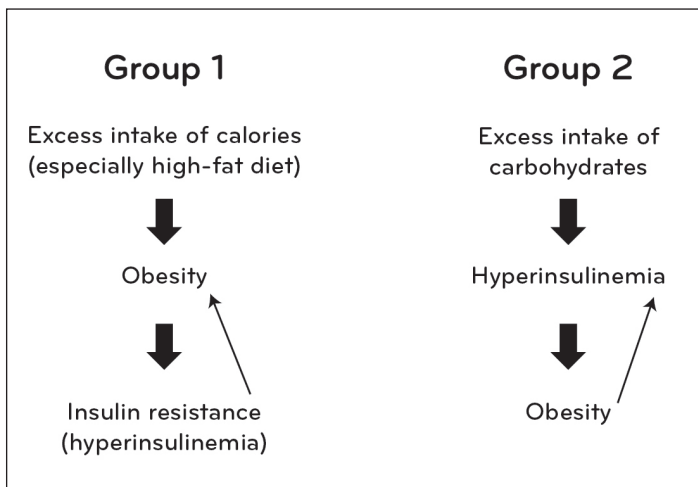
These graphs offer unambiguous evidence that reducing carbohydrate intake can decrease both blood glucose and insulin levels. According to Dr. Gannon, the evidence suggests that it is possible to reset the body's metabolic machinery in a short period of time with diets that contain what Drs. Gannon and Nuttall refer to as LoBAG (low-biologically-available glucose). Dr. Gannon recognized that their results were important not only for people with type 2 diabetes. "As we age, metabolism changes," Dr. Gannon said. "In order to live our healthiest lives, we have to try to adjust some of our lifestyle patterns. One of the easiest things to do to control blood glucose is to decrease the ingestion of starches and sugars."

A vicious cycle connecting fast carbs, obesity, and diabetes traps many people who struggle with their weight

As I worked to understand just what we do know about the elusive mechanisms linking obesity, diabetes, and metabolic disorders, a letter in the *Indian Journal of Endocrinology and Metabolism* caught my attention. “Two models of obesity exist that describe its causation,” the letter read. One model is driven by an excess of dietary fat, the other by highly processed carbs. The writer, Dr. Somi Sankaran Prakash of Christian Medical College, was captivated by the same question I was—is hyperinsulinemia or obesity the trigger for metabolic disease?

What especially drew me to his work was this sentence: “It should be borne in mind, however, that although the origin and causative factors may be different in various ethnic groups, once imbalance occurs, then a vicious cycle ensues in all these populations.”

I called Dr. Prakash and asked him to explain more about this vicious cycle. Here is what he sent me following up on our call:



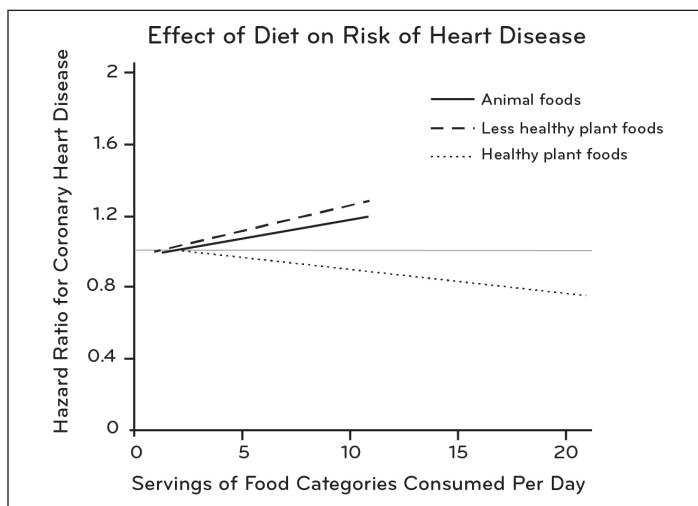
For the vast majority of people, the sequence of the interactions isn't actually that significant. Whether excess glucose leads directly to insulin resistance, which then causes obesity, or excess glucose and fat causes obesity, which then results in insulin resistance, or if some other more complex set of interactions is involved, the solution is still to reduce fast carbs and the calories associated with them.

A diet emphasizing plants and slow carbs is optimal for your health

There is compelling evidence that following a plant-based diet—reducing your consumption of animal products or eliminating them entirely—offers tremendous benefits. One of the most vocal proponents of plant-based eating is Dr. Robert Ostfeld, a Harvard-trained cardiologist. He shared evidence that suggests that a plant-based diet lowers LDL in randomized controlled data as effectively as certain statins. It also lowers C-reactive protein (CRP), a marker of inflammation and cardiovascular risk. In addition, plant-based diets have been shown to lower blood pressure and significantly reduce lipoprotein(a), which is another lipid.

Plant-based diets also improve metabolic health in patients with diabetes. In a randomized control trial of about one hundred people, those on a vegan diet were able to stop taking more diabetes medications than those who followed the recommendations of the American Diabetes Association. The vegans saw greater reductions in their A1c levels (a marker for blood sugar), lost more weight, and lowered their LDL more dramatically.

Dr. Ostfeld pointed to a large-scale study conducted by Dr. Ambika Satija, a postdoctoral fellow in nutrition at Harvard. It demonstrated that the more servings of whole, plant-based foods participants ate, the lower their risk of coronary heart disease. Animal products, including chicken and fish, had the opposite effect (see graph).



Meal Charts

Fast Carbs, Slow Carbs, Low Carbs

I challenged Dr. Nicola Guess, a registered dietitian with a PhD in nutrition who is a research fellow at King's College London and an associate professor at the University of Westminster, to create menus that show examples of fast-carb, slow-carb, and low-carb meal plans. The objective is to move away from a fast-carb diet. For people who struggle with their weight, both a slow-carb and a low-carb diet are shown in recognition that people will need to determine their own optimal places on the continuum between slow carb and low carb.

Monday

	FAST CARBS	SLOW CARBS	LOW CARBS
Breakfast	Blueberry Cheerios (A) Coffee, sugar, milk	Steel-cut oats (B), blueberries Coffee, non-sugar sweetener	Greek yogurt (C), sliced almonds, and blueberries Coffee, non-sugar sweetener (D)
Lunch	Flour tortilla with beef and cheese, salad	Blue corn tortilla (E) with beef and cheese, salad	Beef, cheese, and avocado (F) over a bed of fresh greens
Dinner	Chicken breast with a large serving of short-grain white rice*	Chicken breast with lentils and a small serving of basmati rice* (G)	Chicken and roasted vegetables (H)

- (A) Most commercially packaged cereals are high in sugar, with some form of sugar (brown rice syrup, etc.) listed as one of the first ingredients on the label. Replace boxed cereals with whole, sugar-free cereal grains like oats and add whole natural fruit to taste.
- (B) Steel-cut oats are a great choice as they are an intact grain and contain no sugar. In contrast, instant oatmeal is made from processed oats and contains added sugars.

* Choose a healthy sauce or dressing to your taste, e.g., pesto, tahini, or a simple lemon dressing with fresh herbs.

- (C) By removing the oats you remove most of the carbs. Yogurt contains a small amount of natural carbohydrate in the form of lactose, but only about eight grams per six ounces. Topping with almonds and blueberries will add protein and fiber to help keep you full.
- (D) Ideally, coffee should be consumed without any added sugars, but if you prefer a sweeter taste, a non-sugar sweetener is preferable to sugar.
- (E) Tortillas made from corn, and in particular blue corn, contain more slow carbs than a flour tortilla, which is the definition of a fast carb.
- (F) Removing the tortilla eliminates most of the carbs in this meal. By adding avocado, you add healthy fat and help ensure you don't feel deprived. (Although avocado is 10 percent carb by weight, note that the vast majority of this is fiber and will not cause an increase in blood sugar.)
- (G) Short-grain white rice is a fast carb. Basmati rice is slower, but you can help slow down the absorption even more by replacing some of the basmati rice with lentils, which are high in fiber and protein.
- (H) By removing the rice, you are left with very few carbs. Roast high-fiber cruciferous vegetables like cauliflower, Brussels sprouts, and broccoli in a healthy fat like olive oil to complete the meal.

Tuesday

	FAST CARBS	SLOW CARBS	LOW CARBS
Breakfast	White bread toast, butter, jelly Orange juice	Pumpernickel bread* (A), cream cheese, and smoked salmon	Soft-boiled eggs with avocado and smoked salmon (B)
Lunch	Tuna and mayonnaise on white bread	Cold tuna and pasta salad (C)	Tuna and green salad with almonds and olives (D)
Dinner	Pan-fried fish, vegetables, and rice	Pan-fried fish, vegetables, and tabbouleh† (E)	Pan-fried fish, extra vegetables drizzled generously with olive oil (F)

(A) White bread plus jelly is a double whammy of fast carbs. In contrast, the carbs in traditional pumpernickel bread, not the kind made with white flour, are slow, and cream cheese and salmon add healthy dairy fats and protein, which help slow down absorption even more.

* Sometimes rye bread or pumpernickel bread are terms used interchangeably. For both products, look for “coarsely-ground rye berries/kernels” or “whole rye berries/kernels” on the label and avoid those that contain wheat flour.

† Tabbouleh is a Mediterranean dish made with chopped parsley, mint, onions, lemon juice, and bulgur wheat.

- (B) By removing the bread you remove most of the carbs. Eggs add protein and avocados are a source of healthy fats to help keep you full.
- (C) The carbohydrate in cooled pasta is more resistant to digestion, which makes the carbohydrate release more slowly into the bloodstream.
- (D) By removing the pasta, you cut the carbs. Adding healthy fat sources like almonds to your green salad will help keep you full and provide additional essential nutrients.
- (E) Instead of rice, which is a fast carb, serve tabbouleh as an accompaniment. The intact grain in bulgur wheat makes it a slow carb.
- (F) By removing the tabbouleh, you remove most of the carbs. Add extra vegetables and olive oil for satiating fiber and fat.

Wednesday

	FAST CARBS	SLOW CARBS	LOW CARBS
Breakfast	Flavored low-fat yogurt, granola bar	Plain Greek yogurt (A) Sprinkle of whole oats, handful of pecans, and sliced banana (B)	Plain Greek yogurt Handful of pecans and raspberries (C)
Lunch	Bagel with cream cheese and side salad	Falafel with hummus and side salad (D)	Chicken breast, hummus, and side salad (E)
Dinner	Grilled fish with fries and side salad	Grilled fish with lentil salad (F)	Grilled fish and salad with added pumpkin seeds and pine nuts (G)

- (A) Yogurts are often full of added sugars—some contain as much as three teaspoons of sugar per serving. Always choose plain yogurt instead of flavored varieties, and select Greek whenever possible for extra protein.
- (B) Beware of granolas, even those marketed as healthy—they often use processed grains and a lot of added sugars. You can make your own granola with oats, nuts, and seeds, or just add some intact oats (such as steel-cut oats), pecans, and sliced banana to the yogurt instead.
- (C) By removing the oats, you remove most of the carbs. Depending on your desired carb limit, replacing banana

with low-sugar, high-fiber strawberries or raspberries can lower the carb content by more than ten grams.

- (D) A bagel made with processed wheat flour is the definition of a fast carb. Falafel is made with chickpeas, which offer protein and is a slower carb.
- (E) By having chicken breast instead of falafel, you remove most of the carbs. The hummus and a side salad of mixed leafy greens ensure the meal is fiber- and nutrient-rich.
- (F) Fries are both high fat and a fast carb—a combination that tends to drive overconsumption. Ditch the starches and serve the fish with slow carbs in the form of lentils.
- (G) Removing the lentils removes most of the carbs. Adding a handful of pumpkin seeds and pine nuts reduces the amount of carb. (Although pumpkin seeds seem to have a lot of carbs in them, per the label, the vast majority of this is completely indigestible fiber.)

Thursday

	FAST CARBS	SLOW CARBS	LOW CARBS
Breakfast	Soft-boiled or scrambled egg, hash browns Orange juice	Soft-boiled or scrambled egg, slice of toasted grain bread (A) Whole orange cut in quarters (B)	Soft-boiled or scrambled egg, smoked salmon and spinach (C) Handful of strawberries (D)
Lunch	Instant noodles	Stir fry with zucchini noodles (E) and vegetables	Beef strips and vegetable stir fry (F)
Dinner	Steak with mashed potatoes and gravy	Beef with noodles and root vegetables (e.g., sweet potato) (G)	Beef with root vegetables (e.g., sweet potato) (H)

- (A) Hash browns are processed fast carbs that are also high fat. Choose a small amount of toasted whole grain bread to accompany the egg instead.
- (B) Juice lacks the fiber of the fruit's flesh to help slow digestion and prevent insulin spikes. Select the whole fruit instead.
- (C) By removing the bread, you remove most of the carbs. Adding smoked salmon and some spinach (or other leafy vegetable) adds nutrients and healthy fats and helps you feel full.

- (D) Depending on your desired carb limit, replacing a whole orange with strawberries can lower the carb content by about seven to ten grams.
- (E) Rice noodles are a fast carb. Instead choose zucchini noodles, which are a slower carb, and add nonstarchy vegetables such as broccoli and peppers.
- (F) Removing the noodles removes most of the carbs, and the protein in beef is satiating.
- (G) Mashed potatoes are a fast carb. Choose noodles and a mix of root vegetables, or roasted onions, mushrooms, or Brussels sprouts instead—the carbohydrate is held between an abundance of fiber, which slows it down.
- (H) Removing the noodles removes most of the carbs. Be generous with the root vegetables to ensure you do not feel deprived.

Friday

	FAST CARBS	SLOW CARBS	LOW CARBS
Breakfast	Toasted white bread, butter, and fried egg Flavored latte	Chicken, spinach, and onion omelet on a small slice of whole grain bread (A) Coffee with cream (B)	Chicken, spinach, onion, and cheese omelet (C) Black coffee (D)
Lunch	Pita bread and chicken with side salad	Grilled chicken and quinoa salad (E)	Grilled chicken salad with grated cheese and pine nuts (F)
Dinner	Chicken and mushroom risotto (made with regular risotto rice)	Chicken and mushroom risotto (made with buckwheat) (G)	Chicken and mushroom risotto (made with cauliflower) (H)

- (A) Instead of having fried eggs with white bread, choose a small slice of whole grain bread and add in nonstarchy vegetables such as spinach and onion.
- (B) Flavored drinks from coffeehouses often contain a lot of added sugar, and all that milk—whether regular or alternative varieties like oat or almond—may contain a good deal of carbs as well. (Some almond milks are low in carbs.) Skip the coffee concoctions and opt for brewed coffee with a splash of cream.
- (C) Removing the bread removes most of the carbs. Add cheese to the omelet for protein and fat.

- (D) The lowest carb coffee option is to simply drink it black.
- (E) The glycemic index of pita breads varies. Choose an intact grain such as quinoa to accompany the salad instead.
- (F) Removing the quinoa removes most of the carbs. Add some grated cheese and pine nuts for protein, fat, and flavor.
- (G) Slow down the carbs in risotto by substituting the rice with buckwheat. Buckwheat takes longer to digest than rice so the carbs are released more slowly.
- (H) Removing the risotto removes most of the carbs. Try cauliflower risotto instead, which is made with cauliflower rice (available in the frozen foods section of most grocery stores).

Saturday

	FAST CARBS	SLOW CARBS	LOW CARBS
Breakfast	Breakfast smoothie: oats, banana, milk, strawberries, and almonds blended	Whole oats with chopped strawberries and whole almonds (A)	Low-carb muesli made with unsweetened coconut flakes, sliced almond, and mixed seeds; sliced strawberries (B)
Lunch	BBQ chicken wings and french fries Raspberry sorbet	Grilled fish and coleslaw (C) Frozen yogurt with sliced strawberries (D)	Grilled fish and coleslaw Greek yogurt with sliced strawberries (E)
Dinner	Beef with rice and vegetables	Beef with beans (F) and vegetables	Beef with vegetables with a generous drizzle of olive or canola oil (G)

- (A) Smoothies have a reputation for being healthy. The blender, however, does the body's work for it: think of the blender as "predigesting" your food. Eat the carbs in the oats, fruit, and nuts whole to keep them slow.
- (B) You can make your own low-carb muesli from unsweetened coconut flakes and a mixture of sliced nuts and seeds. There are many recipes online you can try for this and other menu items.

- (C) Instead of fast carbs from potatoes, choose coleslaw made with a variety of slow- and high-fiber carbs including raisins, cabbage, fennel, and celery root.
- (D) Instead of sorbet, which is a fast carb, choose frozen yogurt with strawberry slices. Some frozen yogurts are high in sugar, but the protein and fat in the yogurt helps slow down the carbs.
- (E) For a low-carb dessert, have plain Greek yogurt, which has no added sugar, with sliced strawberries.
- (F) Instead of rice, choose a legume such as cannellini beans or chickpeas. The carbs in legumes are harder for the body to break down, so they are released more slowly.
- (G) By removing the beans, you remove most of the carbs. Add extra vegetables and a generous drizzle of a healthy oil to help you stay full.

Sunday

	FAST CARBS	SLOW CARBS	LOW CARBS
Breakfast	Cereal bar Fruit smoothie: kiwis, strawberries, banana	Homemade whole cereal with oat flakes, sunflower seeds, and hazelnuts (A) Whole banana (B)	Homemade whole cereal with shredded coconut, sunflower seeds, and hazelnuts (C) Kiwi fruit (D)
Lunch	Rice cakes with cottage cheese and smoked salmon	Smoked salmon with barley salad (E)	Smoked salmon with leafy green salad topped with avocado and pine nuts (F)
Dinner	Pork, sticky rice, and vegetables	Pork, udon noodles, and vegetables (G)	Pork, broccoli, and zucchini noodles (H)

- (A) Cereal bars are often marketed as healthy but usually contain processed cereal grains with added sugars. Make your own cereal with plain steel-cut oats and whole nuts and seeds such as hazelnuts and sunflower seeds.
- (B) Fruit smoothies are high in sugar—they contain far more fruit than you would normally eat whole. In addition, the skins and seeds are typically removed, which strips away plant fiber. Choose a small serving of whole fruit instead.
- (C) As mentioned, by removing the oats, you remove most of the carbs. Make your own low-carb muesli from un-

sweetened coconut flakes and a mixture of sliced nuts and seeds.

- (D) Depending on your desired carb limit, replacing a whole banana with a kiwi fruit can lower the carb content by more than ten grams.
- (E) Rice cakes are a fast carb. Choose an intact grain such as a salad made with barley for a slow-carb alternative.
- (F) By removing the barley, you remove most of the carbs. Add a large serving of leafy green salad with added avocado and pine nuts for healthy, satisfying fats.
- (G) Sticky, or gelatinous, rice is the “fastest” kind of rice. In contrast, noodles such as udon noodles contain slower carbs.
- (H) By removing the noodles, you remove most of the carbs. Try swapping in a vegetable-based noodle instead, like zucchini noodles or sweet potato noodles.