

THE LOW  
GLYCEMIC  
GUIDE  
FOR BETTER BLOOD  
GLUCOSE  
CONTROL

Brought to you by:

**Fifty50**  
FOODS

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# Introduction

You already know that carbohydrates play a major role in everyday blood sugar fluctuations. They are the body's fuel of choice because they are the easiest food to digest.

But did you also know there is a ranking of carbs according to which ones produce the highest rise in blood sugar and which produce the lowest? Over the past 30 years, researchers all over the world have taken a closer look at carbohydrates and how they affect blood sugar levels (also called "blood glucose levels").

It turns out that carbohydrates, which were originally thought to have the same effect on blood sugar, are actually quite different. Some carbs increase blood sugar quickly and dramatically; others produce a much slower and smaller rise.

To better understand these differences, researchers at the University of Toronto created the Glycemic Index (GI) to rate carbs according to how much they raise blood sugar levels. Foods with a Low Glycemic Index (Low-GI) rating are slowly digested, metabolized, and absorbed by the body, resulting in a lower rise in blood sugar, compared to High-GI foods, which do the opposite.

For example, measured against glucose which has a GI of 100, ordinary table sugar (sucrose) and fruit sugar (fructose) each have 4 grams of carbohydrates in one teaspoon. So from a carb quantity standpoint, they're equal. But regular table sugar has a GI of 65 and Fifty50 Fructose has a GI of 19. Said differently, sucrose has the potential to raise your blood sugar 3.4 times more than fructose. Not all carbs are equal.

A low glycemic diet will not only help to improve your blood glucose control, it can also help:

- Eliminate dramatic mood swings
- Make you feel more energetic
- Produce an even flow of energy throughout the day
- Make you feel calmer
- Cause you to feel fuller longer
- Lose weight
- Improve your cholesterol levels

<b>Sucrose (table sugar)</b>	<b>*Fifty50 Fructose (fruit sugar)</b>
4 grams carbs	4 grams carbs
GI 65	GI 19

\* Fifty50 Fructose is not the same as High Fructose Corn Syrup (HFCS) which has a GI value of 68.



## Clinical Research Shows Low-GI Diets Improve Control

A research study of children with Type 1 diabetes, published in the American Diabetes Association's *Diabetes Care Magazine*\* compared a low glycemic diet (a flexible approach that considers a carb's impact on blood sugar) with a traditional measured carbohydrate exchange diet (one that counts all carbs the same).

### Here's What the Study Revealed:

- Children were twice as likely to understand the low glycemic diet as they were the carbohydrate exchange diet.
- Twice as many parents in the low glycemic diet group said their child had no difficulties selecting their own foods.
- After 12 months, twice as many children on the low glycemic diet had acceptable HbA1c values compared with subjects in the carbohydrate exchange diet group.
- Conclusion: The carbohydrate exchange diet was associated with inferior blood sugar control and quality of life measures compared to the low glycemic diet.

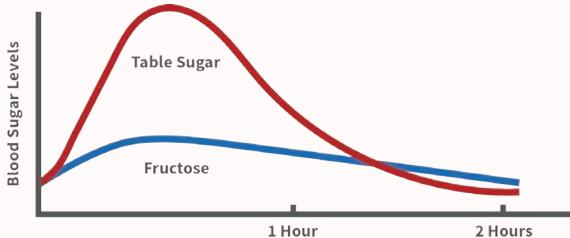
\* Published: *Diabetes Care Magazine* 24:1137-1143, 2001

# The Glycemic Index

The Glycemic Index is divided into three categories:

GI CATEGORY	GI VALUE	NICKNAME
Low GI Foods	0-55	“Tricklers”
Moderate GI Foods	56-69	“Midstreamers”
High GI Foods	70 or more	“Gushers”

## Comparative Blood Glucose Response Following Consumption of Table Sugar vs. Fructose



The area under the curve is a graphic representation of the total glucose absorbed into the blood stream from 50 grams of a particular carbohydrate when compared to 50 grams of glucose, which equals 100. The greater the area under the curve, the higher the rise in blood sugar levels.

Low GI carbs with a GI value between 0 and 55 we call **“tricklers.”** They trickle glucose into the bloodstream slowly because they require more work by the body to digest. “Tricklers” help avoid harmful spikes, subsequent crashes, and are the best carbs for effective blood glucose control.

High GI carbs with a GI value between 70 and 100+ we call **“gushers.”** They require little work by the body to be digested so they gush glucose into the bloodstream quickly. “Gushers” are more likely to produce the harmful spikes and subsequent crashes. Therefore, they are not ideal for effective blood glucose control.

Moderate GI carbs, or **“midstreamers”** fall in between.

## The Bottom Line

“Tricklers” will minimize the spike in blood glucose levels. They’re the best choice for a slow steady stream of energy. “Gushers” produce a spike in blood glucose levels and should be avoided when possible. “Midstreamers” fall in between; they’re not as good as “tricklers,” and not as bad as “gushers.”

## Why After-Meal Blood Sugar Levels Matter

Hemoglobin A1c is a measurement of the average level of glucose in the blood over the last three months. But research has shown you can have a “normal” A1c reading and still be at risk for complications caused by severe blood glucose fluctuations. Why? Because the A1c averages all blood glucose levels; you can have some very low readings along with some very high ones and show an A1c value in the normal or desirable range. It does not reflect after-meal spikes and crashes in blood sugar levels which have been shown to cause the complications of diabetes.

When you choose Low-GI foods, blood sugar levels rise gradually and your insulin supply will be more in sync with your body's needs.

## Factors That Affect the GI Values Of Food

Many factors determine the GI of the foods we eat. Anything that makes it easier for our bodies to digest a carb increases the Glycemic Index value of that food and the resulting blood sugar response.

**Starch.** Starch is an important source of carbohydrates in our diet. Examples of starchy foods include breads, cereals, rice, pasta, and potatoes. There are two kinds of starch and, yes, you guessed it, one is quickly digested and the other breaks down more slowly. Thanks to the GI research we can tell which is which.

**Sugar.** There are several kinds of sugars in the food we eat. Fructose (fruit sugar) and lactose (milk sugar) have low GI's and will not cause a spike in blood sugar. But others, like sucrose (ordinary table sugar) and high-fructose corn syrup, used as a sweetener in many foods, will spike your blood sugar levels. (On a Low-GI diet, you should know that fructose is not the same as high-fructose corn syrup.) Consider this: Fifty50 Pure Crystalline Fructose has a GI of 19. Compare that with ordinary table sugar (sucrose) with a GI of 65 and you realize sucrose has a GI that is 3.4 times higher than fructose. Sweeten your cereal with fructose to avoid blood sugar spikes.



**Cooking.** As a general rule, cooked foods have higher GI values than uncooked foods. Cooking causes starches to swell by absorbing water, which makes them easier to digest. Pasta, when cooked until it's *al dente* (firm), has a lower GI value than the higher GI value of mushy, overcooked pasta.

**Processing.** Much of the food we eat is highly processed. For example, Fifty50 Hearty Oatmeal, with a GI of only 54, is less processed and has a lower GI value than Quaker® 1-Minute Oatmeal's GI value of 66. That means it has the potential to raise blood sugar 22% higher than Fifty50 Hearty Oatmeal would.

**Acid.** The more acidity there is in foods, the more slowly they are turned into blood glucose. Foods that are acidic, such as oranges or sourdough bread, have

low GI's. Adding acid to a meal, in the form of vinegar or a splash of lemon or lemon juice on a salad, will help lower the GI of the entire meal. Glycemic Index research has shown that four teaspoons of vinegar in an average meal (dressing/marinade) can lower the after-meal blood sugar response by as much as 30%.

**Fiber.** Soluble fibers, such as those found in apples and beans will slow digestion. Adding kidney beans, or chickpeas to a salad, or eating an apple as dessert, will lower the after-meal GI response and produce a slower, more subtle rise in blood sugar.

**Fats and Protein.** They slow down the release of food into the small intestine, which in turn slows digestion and the rise in blood sugar.



## Counting Carbs

The GI value of a carb has nothing to do with “serving size.” When you use the Glycemic Index to choose the best carbs for your diet, you still need to count all your carbs; stick within the recommended daily amount of carbs as prescribed by your doctor or nutritionist.

Remember, just because you choose a Low-GI food doesn’t mean you can now eat more of that food. It just means you’ve made a smart informed food choice.

### Takeaway Message

The Glycemic Index is a reliable, effective tool for blood glucose management. Always count your carbs, but when you choose a carb, use the Glycemic Index and make an informed choice about how it will affect your resulting blood sugar levels. Lower A1c’s will be your reward; that, plus lower cholesterol levels, a reduced risk of heart attack, and a reduced chance of a stroke. It’s all there in the clinical research. The Glycemic Index helps you make an informed decision about the quality of the carbs you choose to eat.

## Menu Suggestions

Here are some tasty and healthy meal suggestions to help get you on your way to better health.

### Healthy Breakfast Ideas

- 100% stone-ground whole-wheat toast with **Fifty50 Peanut Butter** and **Fifty50 Fruit Spread**
- Light yogurt with fresh fruit and low-fat granola or bran buds
- **Fifty50 Hearty Cut Oatmeal** with dried apricots (cooked in fat-free milk)
- Low-GI cold cereal (see GI list of foods) with skim milk
- Whole-wheat pita bread stuffed with scrambled egg
- Sourdough French toast with **Fifty50 Strawberry Spread**
- Buckwheat pancakes with **Fifty50 Maple Syrup** and fruit
- Multi-grain waffles with natural applesauce
- Pumpernickel toast with melted low-fat cheese
- Rye toast and egg-white Western omelet and fruit

A Low-GI breakfast includes whole-grain breads or toasts, cereals rated as tricklers, and lots of fresh fruits. Avoid syrups other than **Fifty50 Maple Syrup**, and stay away from instant hot cereals; they’re “gushers.”

## Healthy Lunch Ideas

- Homemade or canned soups made with Low-GI ingredients such as vegetable, lentil, black bean, split pea, minestrone, or barley. Don't be afraid to add extra vegetables to make the soup extra chunky.
- Sandwiches made with lean meats on whole-grain wheat, rye, pumpernickel, or pita bread, along with baby carrots and fruit salad
- Pasta salad with assorted fresh vegetables, reduced fat cheese, and vinaigrette dressing
- Mixed salad with grilled chicken and vinaigrette dressing (be sure to toss in some beans!)
- **Fifty50 Peanut Butter** and **Fifty50 Fruit Spreads** on Low-GI bread and a salad
- Light yogurt with fruit and whole-grain muffin with spreadable light cheese

At lunch time, steer clear of processed white bread and rolls. Instead, make a sandwich using whole-grain pumpernickel or rye bread. Try salads made with lots of fresh vegetables and vinaigrette dressing. Canned tuna or salmon is also a good protein addition.

## Healthy Dinner Ideas

- Pasta, grains, rice, beans, or whole-grain breads
- Fresh vegetables and salads
- Lean meats, chicken, and fish
- Add beans, peas, or lentils for protein sources if you prefer

- Limit intake of high-GI starches from foods such as baked or instant mashed potatoes, instant rice, boxed stuffing mixes, and processed white breads.

Base your meal on Low-GI carbohydrates, with generous amounts of non-starchy vegetables and plenty of fresh salads. Eat lean meats, poultry, and fish. End your balanced meal with a serving of fresh fruit or one of the healthy snacks and desserts listed below.

## Snacks and Desserts Ideas

- No-sugar-added cocoa
- **Fifty50 Cookies**
- Fresh or dried fruits (see GI list)
- Light yogurt with fruit
- Nuts (small serving)
- **Fifty50 Sugar-Free Chocolate Bar** (small serving)
- Sugar-free Jell-O® (add some fruit)
- Sugar-free pudding in **Fifty50 Graham Cracker Pie Crust**
- Low-fat ice cream with fresh fruit
- Whole-wheat pita chips or baked tortilla chips
- Natural applesauce with light whipped topping

You can have dessert! By choosing snacks with a Low-GI value or low-fat desserts, you can help prevent some of the symptoms and complications associated with “gusher” foods.

## Eating Out

To some people, the thought of eating out and of maintaining a Low-GI diet might seem like a contradiction in terms. It's not! Although you might not have as much control over what you eat when you're out of the house, restaurants today offer a growing variety of healthy and delicious Low-GI foods. Many menus feature grilled seafood, fresh vegetables, pastas, and fruits; choices such as these are healthy. And with the growing popularity of ethnic foods, healthy choices are even broader. Here are some tips:

**Chinese food.** Authentic Chinese food features plenty of vegetables and is low in fat—a good, Low-GI option. Limit your intake of starchy, Asian-style sticky white rice, which has a high glycemic index. A Low-GI alternative would be oriental noodles (egg, rice, or mung bean). Try to stay away from deep-fried foods.

**Mexican food.** Most Mexican restaurants in the United States serve high-starch, high-fat foods (including chips), that are denser in calories than they are in nutrients. If possible, stick with grilled seafood and chicken dishes, black beans, and entrees such as fajitas. Limit the sour cream.

**Italian food.** Pasta dishes, seafood dishes, and meat dishes are nutritionally sound choices, as long as they're not overloaded with cheese. Thin-crust pizza with vegetable toppings is a good choice.



And remember, those bread calories eaten while waiting for the meal to arrive still count! Ask if semolina bread is available.

**Japanese food.** Practically anything in an authentic Japanese restaurant works into a Low-GI meal plan, even sushi (it’s prepared with vinegar). Canned lychees, however, have a high glycemic index.

**Thai food.** Thai dishes typically include small amounts of meat, seafood, or tofu with vegetables and spicy sauce. All are good choices from a GI standpoint.

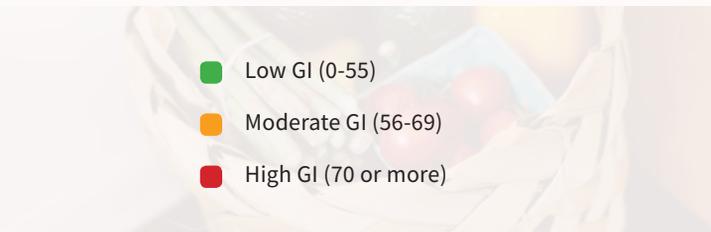
**Indian food.** Indian cuisine is generally friendly to a Low-GI diet. It features legumes, chicken, fish, vegetables, and yogurt. Just be aware of the high-fat fried foods and heavy, butter-based sauces.

**Fast food.** Fast-food restaurants can spell trouble for diets. Hamburgers and other fast-food sandwiches are served with sauces on processed breads and rolls having high GI values. Most fast foods are also very high in fat and sodium. As a general rule, try to avoid fast foods. If you can’t avoid fast-food restaurants, find one that offers salads on the menu.

## Evaluate Your Favorite Carbohydrate Foods

Researchers have determined the GI values of more than 2,500 foods. Here’s a partial list of the more popular carbs you may run into on a daily basis. A complete list of foods and their GI values can be found at: [www.fifty50foods.com](http://www.fifty50foods.com).

**Sources:** Atkinson FS, Foster-Powell K, Brand-Miller JC. International Tables of Glycemic Index and Glycemic Load Values: 2008. *Diab Care* 2008; 31(12). [www.glycemicindex.com](http://www.glycemicindex.com)



- Low GI (0-55)
- Moderate GI (56-69)
- High GI (70 or more)

BREADS			
<span style="color: green;">■</span>	Whole-Grain Pumpernickel	46	
<span style="color: green;">■</span>	Sourdough Rye	48	
<span style="color: green;">■</span>	Corn Tortilla	49	
<span style="color: green;">■</span>	Rye	50	
<span style="color: green;">■</span>	Sourdough Wheat	54	
<span style="color: orange;">■</span>	Whole Wheat Pita	56	
<span style="color: orange;">■</span>	White Pita	57	
<span style="color: orange;">■</span>	Hamburger Bun	61	
<span style="color: orange;">■</span>	Croissant	67	
<span style="color: orange;">■</span>	Taco Shell	68	
<span style="color: orange;">■</span>	Bagel	69	
<span style="color: red;">■</span>	Whole Wheat	72	
<span style="color: red;">■</span>	Kaiser Roll	73	
<span style="color: red;">■</span>	White Bread	73	
<span style="color: red;">■</span>	Bread Stuffing	74	
<span style="color: red;">■</span>	English Muffin	77	
<span style="color: red;">■</span>	French Baguette	95	

## BAKERY

Chocolate Cake, Betty Crocker	38	Carrot Muffin	62
Vanilla Cake, Betty Crocker	42	Pancakes	67
Pound Cake	54	Angel Food Cake	67
Blueberry Muffin	59	Doughnut	76
Bran Muffin	60	Italian Bread	78
		Scone	92

## BREAKFAST CEREALS

All Bran	44	Life	66
Bran Buds	47	Grapenuts	67
Steel-Cut Oats	52	Special K	69
Fifty50 Hearty Cut Oatmeal	54	Golden Grahams	71
Alpen Muesli	55	Honey Smacks	71
Rolled Oats	57	Cheerios	74
Bran Chex	58	Cream Wheat, Instant	74
Mini Wheats	58	Total	76
Raisin Bran	61	Instant Oats	79
Bran Flakes	65	Corn Flakes	80
Cream Wheat, Cooked	66	Rice Krispies	82
		Shredded Wheat	83

## COOKIES

Fifty50 Hearty Oatmeal	30	Fifty50 Coconut	49
Fifty50 Chocolate Chip	34	Arrowroot	63
Fifty50 Butter	36	Shortbread	64
Fifty50 Van. Wafers	41	Clif Bar Cookies & Cream	101
Fifty50 Choc. Wafers	41		

## CRACKERS

Combos, Cheddar	54	Melba Toast	70
Stoned Wheat Thins	67	Soda	74
Breton Wheat	67	Rice Cakes	81

## DAIRY FOODS

Yoplait Nonfat Yogurt	18	Greek Yogurt, Honey	36
Milk, Skim	32	Ice Cream, Van./Choc.	57
Yogurt, LF, Sugar & Fruit	33	Milk, Condensed, Sweetened	61
Milk, Whole	34		

## ENTREES/CONVENIENCE FOODS

Lasagne, Vegetarian	20	Chicken Nuggets	46
Lasagne, Meat	28	Sushi, Salmon	48
Macaroni & Cheese	34	Spaghetti Bolognese	52
Chili, Beef	34	Chow Mein, Chicken	55
Pizza, Supreme	36	Hamburger on Bun	60
Chili, Vegetarian	39	Pizza, Cheese	60
Fajitas, Chicken	42	Fillet-O-Fish on Bun	66

## LEGUMES

Peas, Split	25	Pinto Beans	33
Kidney Beans	29	Chickpeas	36
Lentils	29	Butter Beans	36
Navy Beans	31	Baked Beans	40
Cannellini Beans	31		

## FRUITS

■ Grapefruit, Fresh	25	■ Grapes, Fresh	43
■ Pears, Canned, Light Syrup	25	■ Mandarin, Canned in Juice	47
■ Prunes	29	■ Mango, Fresh	51
■ Strawberry Fruit Leather	29	■ Blueberries, Fresh	53
■ Apricots, Dried	31	■ Papaya	56
■ Apricots, Fresh	34	■ Kiwi	58
■ Apple	39	■ Figs, Dried	61
■ Plum	40	■ Banana, Fresh	62
■ Strawberries, Fresh	40	■ Dates, Fresh	62
■ Orange, Fresh	40	■ Cherries, Fresh	63
■ Peaches, Canned, Nat. Juice	40	■ Raisins	64
■ Pear, Fresh	41	■ Pineapple, Fresh	66
■ Peaches, Fresh	42	■ Cantaloupe, Fresh	68
■ Orange Marmalade	43	■ Watermelon	76
■ Nectarine, Fresh	43	■ Lychee, Canned in Syrup	79
		■ Dates, Dried	102

## SUGARS AND SUGAR SUBSTITUTES

■ Tagatose	3	■ Honey	58
■ Xylitol	7	■ Table Sugar	65
■ Agave Nectar	13	■ Glucose	100
■ Fifty50 Fructose	19	■ Maltose	105
■ Fifty50 Maple Syrup	19		

## GRAINS

■ Barley	28	■ Rice, Wild	57
■ Wheat Berries	30	■ Rice, Basmati	57
■ Rice, Brown & Wild	45	■ Rice, Long Grain	60
■ Bulgur	47	■ Couscous	61
■ Rice, Brown, Pouch	48	■ Cornmeal	68
■ Rice, Long Grain & Wild	49	■ Rice, White, Instant	74
■ Rice, Brown	50	■ Rice, Sticky	88
■ Quinoa	53	■ Rice, Jasmine	109
■ Buckwheat	54		

## SNACK FOODS AND CANDY

■ Peanuts	7	■ Twix Cookie Bar	44
■ Mixed Nuts & Raisins	21	■ Milky Way Lite	45
■ Cocovia Choc. Almonds	21	■ Combos, Cheddar	54
■ Dove, Dark Chocolate	23	■ Pringles Potato Chips	57
■ Dove Chocolate Candy	23	■ Milky Way	62
■ SoLo GI Bar, Mint Mania	23	■ Popcorn	65
■ Nutella Spread	29	■ Life Savers	70
■ Fifty50 Milk Chocolate	31	■ Pirate's Booty	70
■ Extended Bar	32	■ Skittles	70
■ M&Ms, Peanut	33	■ Pop Tarts	70
■ Tortilla Chips, Spicy	34	■ Jelly Beans	78
■ Chocolate Milk	43	■ Pretzels	84

## PASTA AND NOODLES

■ Fettucine, Egg	32	■ Spaghetti, White	49
■ Vermicelli, White	35	■ Linguine, White	52
■ Ravioli, Meat-Filled	39	■ Lasagne, Egg	53
■ Noodles, Mung Bean	39	■ Fusilli, White	55
■ Noodles, Rice, Fresh	40	■ Noodles, Udon	62
■ Spaghetti, Semolina	41	■ Gnocchi	68
■ Spaghetti, Whole Wheat	42	■ Noodles, Chinese, Fresh	82
■ Capellini	45	■ Brown Rice Pasta	92

## VEGETABLES

■ Broccoli	10	■ Potato, New, Canned	65
■ Tomatoes	15	■ Potato, Sweet	70
■ Carrots, Peeled/Boiled	33	■ Potato, Mashed	76
■ Butternut Squash	51	■ Potato, Mash, Instant	87
■ Yam	54	■ Potato, Red	89
■ Potato, Red, Cold	56	■ Cassava	94
■ Corn, Sweet	60	■ Potato, Russet	111
■ Potato, French Fries	64		

## SOUPS

■ Mushroom Barley	45	■ Lentil	57
■ Minestrone	48	■ Black Bean	57
■ Tomato	52	■ Split Pea	60

Now that you know that all carbs are not the same when it comes to managing blood sugar control...

## Let's Get Started:

- Keep counting your carbs and be mindful of your carb portions
- Choose carbs with a Low-GI value, “tricklers” not “gushers”
- Keep this Glycemic Guide for easy reference
- And, remember what you learned: “Not all carbs are created equal”

## Look for the Fifty50 Low-GI Seal



For additional info and research articles on low glycemic diets go to [www.fifty50foods.com](http://www.fifty50foods.com).

# Fifty50 FOODS

[www.fifty50foods.com](http://www.fifty50foods.com)  
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