

The Glycemic Index

The amount of carbohydrates in a food (called "carb content") is a crucial factor affecting blood glucose. However, other factors also influence the blood glucose pattern following a meal or snack, including the quality of the carbs. The quality of the carb affects the rate at which it is digested; how quickly a food is broken down, in turn, affects how quickly blood glucose will rise when you eat that food. The reverse is true: foods that digest slowly can help prevent blood sugar from rising significantly.

For example, foods with high fiber content (which includes less-refined grains, such as those in whole grain bread) will be digested more slowly than similar foods with a low fiber content (which are often highly-refined grains, such as white bread); foods with a high-fat content (such as hash browns) will be digested more slowly than similar foods with a low-fat content (such as mashed potatoes). These different rates of digestion result in a different effect on blood glucose. This is the foundational idea behind the Glycemic Index (GI).

WHAT IS THE GLYCEMIC INDEX?

The Glycemic Index (GI) is a list of foods with a number assigned to each food. This number, a food's GI, describes how quickly (or slowly) that food will be digested: A food with a low GI value will be digested more slowly than a food with a high GI value; thus, a low GI food (such as oatmeal) will raise blood sugar slowly, while a high GI food (such as Cheerios) will raise blood sugar quickly.

According to the University of Sydney, the global authority for the glycemic index:

"The glycemic index (or GI) is a ranking of carbohydrates on a scale from 0 to 100 according to the extent to which they raise blood sugar (glucose) levels after eating. Foods with a high GI are rapidly digested, absorbed, and metabolized, resulting in marked fluctuations in blood sugar (glucose) levels. Low GI carbohydrates (are digested more slowly and) produce smaller fluctuations in your blood glucose."



In short:

The carb content of a food determines **how much** it will raise blood sugar.

The Glycemic Index of a food describes **how quickly** it will raise blood sugar.



WHY DOES THE *Glycemic Index Matter*

To start with, the concept of the Glycemic Index is essential for matching insulin action to the rate of digestion of a given food by timing insulin delivery to hold blood glucose as steady as possible after a meal or snack. To avoid post-meal blood glucose spikes, insulin needs to be delivered at a different time for high-glycemic index foods than for low-glycemic index foods.

In addition, a food's Glycemic Index (GI) value is relevant in choosing effective treatments for low blood glucose. A fast-acting sugar will increase blood glucose more quickly than a slower one. In other words, foods with a high glycemic value will raise blood glucose faster than those with a lower GI value (such as fruit juice or cola). This is not to say that lower GI foods cannot be used as low treatments, only that the delayed effect on blood glucose should be considered before providing a second low treatment for the same episode.

WHAT DO GLYCEMIC INDEX NUMBERS MEAN?

100 is the GI value of pure glucose, which raises blood glucose very quickly and is the standard against which all other foods are compared. When you look at a glycemic index list, the number beside each food indicates how quickly that food will raise your child's blood glucose.

A high number represents fast food digestion; high glycemic index foods will raise blood glucose quickly, resulting in higher and longer post-meal blood glucose spikes.

A low number represents slow food digestion; low glycemic index foods will raise blood glucose slowly, resulting in "flatter" post-meal blood sugar graphs.

LEVELS ON THE GLYCEMIC INDEX

Low GI foods have a GI value =	0-55
Medium GI foods have a GI value =	56-69
High GI foods have a GI value =	70+



WHY DOES THE *Glycemic Index Matter*

The key to managing blood glucose... matching insulin to food intake!

As is universally the case for type 1 diabetes, when eating any type of food, the goal is to match insulin action with the rate of digestion of the food so that there is the right amount of insulin at the right time to cover the food.

We need the right amount of insulin at the right time
for optimal post-meal blood glucose.

You might find that timing your regular insulin dose around 15 minutes before a meal works well for most meals. This timing usually matches the digestion rate of moderate glycemic index (GI) foods, helping to control blood sugar levels without causing them to drop too low. Rapid-acting insulin matches well with the digestion rate of these moderate GI foods.

However, with low GI meals, giving the usual insulin dose often leads to a drop in blood sugar followed by a rise later on. This happens because the insulin kicks in before all of the food is digested, leading to too much insulin initially and not enough later when the slowly digested food releases glucose into the bloodstream.



When dosing insulin for meals, consider the glycemic index (GI) of the foods being consumed. For moderate GI meals, timing your insulin dose about 15 minutes before eating can help control blood sugar levels effectively. However, for low GI meals, be cautious as giving the usual insulin dose may lead to a drop in blood sugar followed by a rise later on.

GLICEMYC INDEX

grains and starches

Low Glicemyc Index (55 or less) Choose Most Ofen	Medium Glicemyc Index (56 to 69) Choose Less Ofen	High Glicemyc Index (70 or more) Choose Least Ofen
<ul style="list-style-type: none"> • BREAD Heavy Mixed Grain Breads Spelt Bread Sourdough Bread Tortilla (Whole Grain) • CEREAL: All-Bran™ Cereal All-Bran Buds™ With Psyllium Cereal Oat Bran Oats (Steel Cut) • GRAINS: Barley Bulgur Mung Bean Noodles Pasta (Al Dente, Firm) Pulse Flours Quinoa Rice (Converted, Parboiled) • OTHER: Peas Popcorn Sweet Potato Winter Squash 	<ul style="list-style-type: none"> • BREAD: Chapati (White, Whole Wheat) Flaxseed/Linseed Bread Pita Bread (White, Whole Wheat) Pumpnickel Bread Roti (White, Whole Wheat) Rye Bread (Light, Dark, Whole Grain) Stone Ground Whole Wheat Bread Whole Grain Wheat Bread • CEREAL: Oats (Instant) Oats (Large Flake) Oats (Quick) Grains: Basmati Rice Brown Rice Cornmeal Couscous Rice Noodles White Rice Wild Rice • OTHER Beets Corn French Fries Parsnip Potato (Red, White, Cooled) Rye Crisp Crackers Crackers 	<ul style="list-style-type: none"> • BREADS: Bread (White, Whole Wheat) Naan (White, Whole Wheat) • CEREAL: Corn Flakes Cereal Cream of Wheat (Instant) Puffed Wheat Cereal Rice Krispies Cereal • GRAINS: Jasmine Rice Millet Sticky Rice White Rice (Instant) • OTHER: Carrots Potato (Instant Mashed) Potato (Red, White, Hot) Pretzels Rice Cakes Soda Crackers

GLICEMYC INDEX

fruit

Low Glicemyc Index (55 or less) Choose Most Ofen	Medium Glicemyc Index (56 to 69) Choose Less Ofen	High Glicemyc Index (70 or more) Choose Least Ofen
Apple Apricot (Fresh, Dried) Banana (Green, Unripe) Berries Cantaloupe Grapefruit Honeydew Melon Mango Orange Peach Pear Plum Pomegranate Prunes	Banana (Ripe, Yellow) Cherries (Bottled) Cherries (Fresh) Cranberries (Dried) Figs (Fresh, Dried) Grapes Kiwi Lychee Pineapple Raisins	Banana (Brown, Overripe) Watrmelon

GLICEMYC INDEX

milk, alternatives and other beverages

Low Glicemyc Index (55 or less) Choose Most Ofen	Medium Glicemyc Index (56 to 69) Choose Less Ofen	High Glicemyc Index (70 or more) Choose Least Ofen
Almond Milk Cow Milk (Skim, 1%, 2%, Whole) Frozen Yogurt A Greek Yogurt Soy Milk Yogurt (Skim, 1%, 2%, Whole)		Rice Milk