

# Sugar and the Glycemic Index: The Truth is Sweeter Than Fiction

Think Sugar Ranks High on the Glycemic Index?

Think Again!



## THE BASICS: GLYCEMIC INDEX AND GLYCEMIC LOAD

In order to unlock the energy from food and meet basic energy needs, the body must convert the starches and sugars in food into glucose. The glycemic index (GI) is a measure of how quickly the starches and sugars in a food or beverage are broken down to glucose and released into the bloodstream after a food or beverage is consumed. The glycemic load (GL) is determined by multiplying a food's glycemic index by the amount of carbohydrate it contains.<sup>1</sup>

## THE WHOLE TRUTH ABOUT SUGAR

As nature's original sweetener, sugar has a moderate GI, similar to that of wheat bread. The table to the right provides GI and GL information for a list of common foods and shows that despite persistent myths, sugar is, in fact, not a high glycemic food.

Rather, coming in at a GI of 58, sugar is only 3 points above the low GI range (of 55 or below) and also has a low glycemic load. The premise that sugar causes a rapid rise in blood glucose (also known as glycemic response), triggering an abnormal production of insulin followed by an atypical drop in blood glucose, is not a physiological or scientific reality. Put simply, sugar ranks somewhere in the middle of carbohydrate foods when it comes to raising blood glucose.

## THE GLYCEMIC INDEX DIET, DEBUNKED

The theory behind using GI as a dieting tool fails to recognize that foods are not eaten in isolation. A person's glycemic response to a food can be impacted by numerous factors (see sidebar for a list of these factors) and can vary greatly between individuals, making it a controversial benchmark for a food's nutritional value.<sup>3</sup> To dive even deeper, the same food can affect the same individual differently depending on the activity level before consumption (i.e., after sleep or exercise).<sup>4</sup>

## Comparison of Glycemic Index and Glycemic Load of Certain Foods<sup>2</sup>

	Glycemic Index	Glycemic Load
Apple	40	6
Baked Potato	85	26
Brown Rice	50	16
Carrots	92	5
Corn Flakes	92	24
Orange Juice	50	13
Plain Bagel	72	25
Potato Chips	54	11
Wheat Bread	53	11
Table Sugar (Sucrose)	58	6

### Ranges for glycemic index (GI) and glycemic load (GL)

	GI	GL
High	70 or more	20 or more
Medium	56 to 69	11 to 19
Low	55 or less	10 or less

K F Powell et al, International table of glycemic index and glycemic load values: 2002, *Am J Clin Nutr* 2002; 76:5-56.

## FACTORS INFLUENCING A FOOD'S GI<sup>1</sup>



- Other foods consumed during the same eating occasion
- Cooking method
- Ripeness and storage time
- Processing
- Variety (e.g., short-grain vs. long-grain rice)

# Sugar and the Glycemic Index: The Truth is Sweeter than Fiction

## WHAT DO THE EXPERTS HAVE TO SAY ABOUT GI?

A number of health-focused organizations and initiatives, including the American Diabetes Association, Academy of Nutrition and Dietetics, Dietary Guidelines for Americans, and Institute of Medicine have evaluated the value of GI/GL.<sup>1,4,5,6</sup> While some of them acknowledge limited utility of these measures, the consistent theme among these evaluations is that GI is not a stand-alone tool on which to base dietary changes; rather, calorie balance/reduction leads to a more profound, positive impact on health, and that includes people with diabetes.



“There is no one diet or meal plan that works for everyone with diabetes. The important thing is to follow a meal plan that is tailored to personal preferences and lifestyle and helps achieve goals for blood glucose, cholesterol and triglyceride levels, blood pressure, and weight management. Research shows that both the amount and the type of carbohydrate in food affect blood glucose levels. Studies also show that the total amount of carbohydrates in food, in general, is a stronger predictor of blood glucose response than the GI. Based on the research, for most people with diabetes, the first tool for managing blood glucose is some type of carbohydrate counting.”

- American Diabetes Association<sup>1</sup>

“A food’s GI ranking only applies when a food is consumed on an empty stomach without any other type of food. As anyone who’s ever eaten food knows, this isn’t always how we eat. Sure, a bag of pretzels may be a stand-alone snack, but how often do we eat just a plain potato with nothing else? Add a lean steak or a piece of salmon, a side of broccoli and a salad with vinaigrette, and the protein, fiber and fat will all serve to lower the glycemic index. In addition, the glycemic index doesn’t take into account how much we’re actually consuming.”

- Academy of Nutrition and Dietetics<sup>4</sup>

## THE BIG PICTURE

The moral of the story is as follows: using measures like GI and GL can be useful in determining how quickly a food item, when eaten alone, will break down in the body. However, a recent study shows GI may not be the best approach for food guidance.<sup>7</sup> Planning a nutritious diet comes down to balance and variety of food choices. As recommended by the Dietary Guidelines for Americans, 2015 – 2020, a healthy eating pattern includes fruits, vegetables, whole grains, dairy and protein foods and allows the flexibility to also add sugar.<sup>8</sup>

And, what links all of this advice together? At the end of the day, all foods in a healthy eating pattern must fit within a recommended number of calories.

1. Glycemic index and diabetes. American Diabetes Association. <http://www.diabetes.org/food-and-fitness/food/what-can-i-eat/understanding-carbohydrates/glycemic-index-and-diabetes.html>. Updated May 2014. Accessed: 19 July 2016.

2. Nutrition recommendations and interventions for diabetes. American Diabetes Association, 2007;30(1):48–65. doi: 10.2337/1407-S048.

3. Foster-Powell K, Holt SH, Brand-Miller JC. International table of glycemic index and glycemic load values: 2002. The American Journal of Clinical Nutrition, 2002;76(1):5–56.

4. Zeevi D, Korem T, Zmora N, et al. Personalized Nutrition by Prediction of Glycemic Responses. Cell. 2015;163(5):1079–94.

5. Otten J, Hellwig J, Meyers L. Dietary Reference Intakes: The Essential Guide to Nutrient Requirements. Institute of Medicine. <https://fnic.nal.usda.gov/sites/fnic.nal.usda.gov/files/uploads/DRIEssentialGuideNutReq.pdf>. Published 2006. Accessed: 19 July 2016.

6. Kimball M. What is Glycemic index? Eat Right. Academy of Nutrition and Dietetics. <http://www.eatright.org/resource/food/nutrition/dietary-guidelines-and-myplate/what-is-glycemic-index>. Published February 5, 2014. Accessed: 19 July 2016.

7. Matthan NR, Ausman LM, Meng H, Tighiouart H, Lichtenstein AH. Estimating the Reliability of Glycemic Index Values and Potential Sources of Methodological and Biological Variability. Am J Clin Nutr. 2016; doi: 10.3945/ajcn.116.137208.

8. U.S. Department of Health and Human Services and U.S. Department of Agriculture. 2015–2020 Dietary Guidelines for Americans. 8th Edition. ODPHP. <http://health.gov/dietaryguidelines/2015/>. Published December, 2015. Accessed: 19 July 2016. Matthan NR, Ausman LM, Meng H, Tighiouart H, Lichtenstein AH. Estimating the reliability of glycemic index values and potential sources of methodological and biological variability. Am J Clin Nutr. 2016; doi:10.3945/ajcn.116.137208.