

Glycemic Index and Glycemic Load

Glycemic Index (GI) is a numerical index that ranks carbohydrate-rich foods according to their effect on blood glucose (i.e., blood sugar) levels – the higher the number, the greater the rise in blood glucose. Pure glucose is used as a reference point, and is given a GI of 100.

However, your body's glycemic response (i.e., conversion of carbohydrate into glucose) depends on both the type and amount of carbohydrate consumed.

Glycemic Load (GL) takes into account how much carbohydrate is in a particular food. Therefore, although watermelon has a relatively high GI of 72, a 1-cup serving has a relatively low GL of 8.

Why Glycemic Index is Important

Your body works hard to maintain a relatively constant blood glucose level. When it drops too low, you become tired and/or hungry. When blood glucose gets too high, your pancreas secretes more insulin, which brings blood glucose back down by converting much of the excess glucose to stored body fat. The faster the blood glucose level increases, the more likely that the pancreas will release excess insulin, and drive blood glucose back down too low. This leads to a never-ending cycle of tiredness, fat storage, hunger, and then overeating. Therefore, the GI is used to identify and avoid foods that cause the greatest increase in blood glucose levels and corresponding increases in insulin. Since individuals with diabetes have the inability to secrete or process insulin, the GI is a valuable tool available to help improve diabetes control.

Potential Benefits of Eating Mainly Low GI Foods

- Weight loss and weight management
- Increase the body's sensitivity to insulin (thus, causing less insulin secretion)
- Improve diabetes control
- Reduce your risk for getting heart disease
- Reduce your risk for getting type 2 diabetes
- Reduce blood cholesterol levels
- Control your appetite (reduce hunger and improve satiety)
- Improve physical endurance
- Help replace carbohydrate (glycogen) stores after exercise

Limitations of GI - GI is not a "magic bullet," but just one part of healthy eating.

- *Scarcity of GI data* – GI values have been determined for a very small percentage of foods.
- *Wide variations in GI measurements* – measurements are not very precise, and are actually averages of several tests.
- *GI values affected by preparation method* – values change according to food preparation methods.

- *GI values affected by combination with other foods* – the addition of other foods that contain fiber, protein or fat will typically reduce the GI of the meal.
- *Individual differences in glycemic response* – the rate at which different people digest carbohydrates is variable.
- *Reliance on GI and GL can lead to over consumption* – many foods that have a low GI are also very high in fat and calories.

Evaluating GI and GL

	Low	Medium	High
Glycemic Index (GI)	≤55	56-69	≥70
Glycemic Load (GL)	≤10	11-19	≥20

GI and GL for Selected Foods

Food Group	Food	GI	Serving Size		GL	
			oz	g		
Breads	White bread	73	1.06	30	10	
	Whole wheat bread	71	1.06	30	9	
	Pumpernickel bread	50	1.06	30	6	
Cereal/Grains	White rice	79	5.29	150	40	
	Brown rice	55	5.29	150	18	
	Spaghetti	42	6.35	180	20	
	Cornflakes	92	1.06	30	24	
	Shredded wheat	75	1.06	30	15	
	Oatmeal (rolled)	54	0.88	25	9	
Fruit	Watermelon	72	4.23	120	4	
	Raisins	64	2.12	60	28	
	Bananas	51	4.23	120	13	
	Oranges	48	4.23	120	5	
	Grapes	43	4.23	120	7	
	Strawberries	40	4.23	120	2	
	Apples	40	4.23	120	6	
	Grapefruit	25	4.23	120	3	
	Vegetables	Baked potato	85	5.29	150	26
		Corn	53	5.29	150	17
Sweet potato		61	5.29	150	17	
Peas		48	2.82	80	3	
Carrots		47	2.82	80	3	
Legumes	Lima beans	32	5.29	150	10	
	Garbanzo beans	33	5.29	150	10	
	Red lentils	26	5.29	150	5	
	Peanuts	14	1.76	50	1	
Dairy	Milk (nonfat)	32	8.82	250	4	
	Low fat fruit yogurt	33	7.05	200	10	
	Ice cream	61	1.76	50	8	

Sugar	Sucrose (table sugar)	68	0.35	10	7
	Honey	55	0.88	25	10
Snacks	Pretzels	83	1.06	30	16
	Popcorn (plain)	72	0.71	20	8
	Potato chips	54	1.76	50	11

*Adapted from: Mendosa.com. Revised international of Glycemic index (GI) and Glycemic load (GL) values–2002. Accessed 8/26/06:
<http://www.mendosa.com/gilists.htm>

Other References

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