

Glycemic Index (GI)

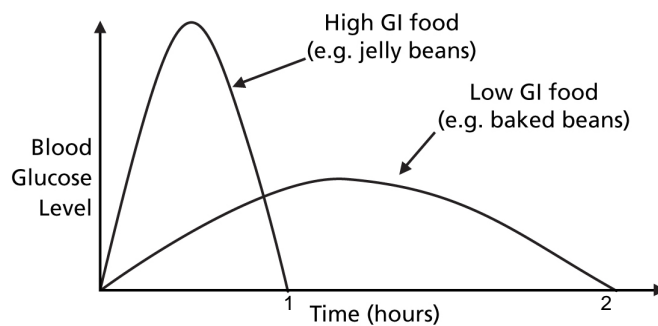
and diabetes

What is the Glycemic Index?

All carbohydrate foods are broken down into glucose during digestion and will produce a rise in blood glucose levels after they are eaten. However, different carbohydrate foods affect blood glucose levels at different rates. The Glycemic Index (GI) of a food indicates how quickly and how high your blood glucose levels rise after eating that food. It applies only to carbohydrate foods.

Foods with a **high GI** produce a **fast, high rise** in blood glucose levels

Foods with a **low GI** produce a **slower, lower rise** in blood glucose levels



Why is GI important?

There is a close relationship between GI and diabetes. High GI foods result in higher, more erratic blood glucose levels. Low GI foods help control diabetes as they produce lower, more stable blood glucose levels.

Low GI foods can also make you feel fuller for longer, which can assist in controlling appetite.

Factors that influence the GI of food

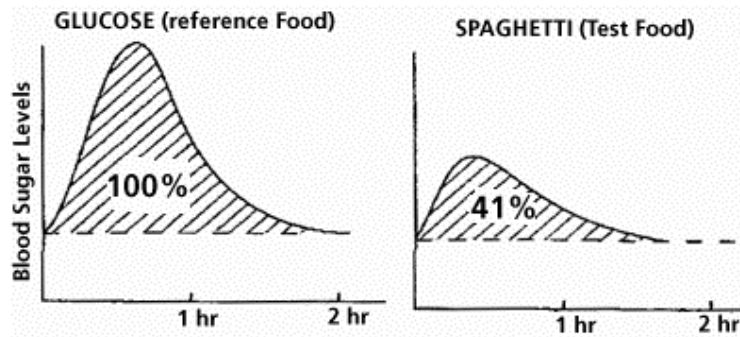
- > The type of starch present
- > The physical form of the food, e.g. ripeness – riper fruit has a higher GI
- > The amount of cooking and processing – usually increases the GI
- > Amount of water-soluble fibre present – lowers the GI
- > The type of sugar – fruit sugar (fructose) and milk sugar (lactose) both have a lower GI than sucrose (table sugar)
- > Fat and protein content – these lower the GI of a food/meal
- > The acidity of food – e.g. adding lemon juice to food decreases the GI



What do the numbers mean?

Each food that has had its glycemic index measured is given a number from 1-100 to tell us whether the food is low, medium or high GI. The number is derived from measuring the blood glucose levels in people that have been given the amount of a food containing 50g of carbohydrate. Pure glucose is used as a reference for measuring all other foods as it produces the fastest, highest rise in blood glucose levels and has been given a GI of 100.

The chart below compares the GI between glucose and spaghetti.



Spaghetti raises blood glucose levels only 41% as much as glucose, so it has a GI of 41.

- > Low GI foods have a GI less than 55
- > Medium GI foods have a GI between 55 and 70
- > High GI foods have a GI greater than 70

How to use GI in your eating plan

GI is not the only factor to consider when deciding if a food is 'good' or 'bad'. You should also consider:

- > The fat content of foods (e.g. potato crisps & chocolate have a low GI but are high in fat).
- > The quality of the food – aim to eat a large range of foods, such as breads & cereals, fruits & vegetables, which are high in fibre, vitamins and minerals.
- > The amount of food that you eat (e.g. eating a very small amount of a high GI food, such as a slice of watermelon, may not have a large effect on blood glucose levels).

Important points about GI

- > Aim to include 3 low GI foods throughout the day, ideally one at each meal.
- > Eat high GI foods with low GI foods whenever possible; this will bring down the average GI of a meal.
- > All the carbohydrates you eat do not need to be low GI.

Common carbohydrate foods and their average GI rating

	Low GI (<55)	Moderate GI (55-70)	High GI (>70)
Breads	Wholegrain / Multigrain breads, Fruit loaf, "Low GI" white breads, Sourdough bread, Chapatti, Country life low GI gluten free bread, Moores gluten & wheat free yeast free wholegrain bread	Wholemeal bread, Hamburger bun, Rye bread, Croissant, Crumpet, Pita bread, Wheat Roti	White bread, Bagel, Gluten-free bread, English muffin, Baguette
Breakfast Cereals	All Bran, Guardian, Porridge, Special K, Rice bran, Oat bran, Freedom foods muesli, Vogels vita pro breakfast cereal	Un-toasted muesli, Just Right, Nutri-Grain, Sustain, Weet-Bix, Shredded wheat	Sultana Bran, Bran Flakes, Coco-Pops, Puffed Wheat, Rice Bubbles, Cornflakes
Grains	Barley, Pasta (all types), Noodles, Semolina, Buckwheat, Pearl barley, Bulgur, Doongara CleverRice	Basmati rice, Wild rice, Brown rice, Couscous, Cornmeal, Polenta, Arborio rice	Calrose rice, Jasmine rice, Rice cakes, Corn thins, Tapioca, Millet
Legumes	Beans (most types – kidney, soy, baked), Split peas, Chick peas, Lentils		Broad Beans
Starchy Vegetables	Sweet corn, Taro	Sweet potato	Other potatoes, Parsnip
Fruit	Grapefruit, Peach, Apricot, Apple, Pear, Plum, Orange, Grapes, Banana, Cherries, Mango, Dates, Fruit juice	Sultanas, Paw paw, Raisins, Rockmelon, Pineapple	Watermelon
Dairy Foods	Milk, Yoghurt, Custard, Ice cream, Soy milk	Condensed milk	Rice milk
Biscuits	Oatmeal, Arnott's Full O'Fruit, Arnott's Spicy Fruit Roll, Arnott's Snack Right, Ryvita with grains, Vita-Weat	Digestives, Shredded Wheatmeal, Milk Arrowroot, Jatz, Ryvita	Morning Coffee, Water crackers, Sao


The GI symbol

Some food packages will have a GI symbol (as shown) on the label. When you see the GI symbol, it means that the food has been tested for its glycemic index and has a low GI. The actual GI value will appear near the nutrition information panel. Foods can only have the GI symbol if they have a low glycemic index and meet other nutritional benefits including lower in energy (calories/kilojoules), fat, saturated fat and sodium, and where appropriate, higher in fibre and calcium.



The food company must pay to have the GI symbol on their product and not all food companies will be involved in this program. Therefore, it is important to remember that foods that do not have the GI symbol may still be low GI.

If a food without the GI symbol claims it is "low GI", be cautious – it may not be. A recent Australian survey found that 8 out of 10 low GI claims on foods that did not use the GI Symbol were incorrect - the foods were either medium or even high GI.



Key points

- > GI only applies to carbohydrate foods.
- > Low GI foods produce lower, more stable blood glucose levels.
- > GI is not a measure of how healthy a food is! It is important to also consider the quality and quantity of the food you are eating.
- > The GI symbol on a label indicates that the food has a low GI. Foods without this symbol may still have a low GI.
- > Aim to include 3 low GI foods throughout the day, ideally one at each meal. All the carbohydrate foods you eat do not need to be low GI.
- > Try to eat high GI foods with low GI foods whenever possible.

The Nutrition Department of Children, Youth and Women's Health Service, South Australia would like to acknowledge The Diabetes Centre, The Queen Elizabeth Hospital, Woodville, South Australia.

More information

- > Website: www.glycemicindex.com
- > Book: *The New Glucose Revolution – 3rd Edition (2003)*, written by *Jennie Brand-Miller & Kaye Foster-Powell*
- > Website: www.gisymbol.com.au

Food product information contained in this resource was up to date at the time of revision. If you are not sure about a food, check with the manufacturer.

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