

Glycaemic Index

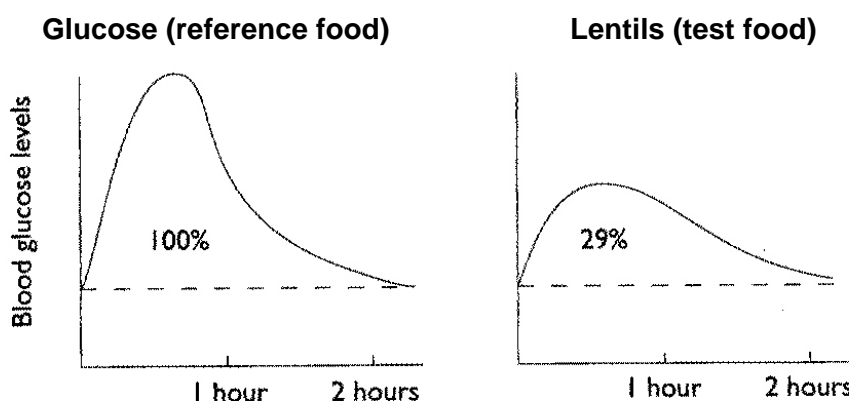
What is the Glycaemic Index (GI)?

The Glycaemic Index (GI) is a ranking of carbohydrate foods from 1-100 that tells us whether a food will raise blood glucose levels dramatically, moderately, or just a little. Carbohydrate foods are those that contain starches or sugars – e.g. cereals, grains, starchy vegetables (potato, sweet potato and corn), legumes, bread, fruit, milk and yoghurt.

How is GI measured?

GI is derived from measuring the blood glucose levels in people after they have eaten an amount of food that contains 50g of carbohydrate (starches or sugars). Different foods contain different amounts of carbohydrates – (e.g. 50g of carbohydrate = 3 medium boiled potatoes or 1 ½ cups of pasta or 1 ½ cups of lentils).

Carbohydrate foods that **break down slowly** and release glucose gradually into the blood stream have a **low GI**. Carbohydrate foods that **break down quickly** produce a faster and higher rise in blood glucose levels and have a **high GI**. The chart below compares the GI between pure glucose and lentils.



Pure glucose produces the fastest and highest rise in blood glucose levels. This is why glucose is given a GI of 100 (or 100%) and is used as a reference for measuring against all other foods. Lentils (as shown) raise blood glucose levels only 29% as much as glucose, so they have a GI of 29.

Why is GI important?

There is a relationship between GI and diabetes. **High GI foods** may result in the body requiring more of the hormone insulin to be produced (or injected for those people requiring insulin) to control blood glucose levels. **Low GI foods** help with the management of established diabetes as they can result in lower and less variable blood glucose levels. Low GI foods can also promote weight loss by making you feel more full and assisting in appetite control and increasing fat metabolism.

Food is not 'good' or 'bad' only on the basis of its GI. You should also consider:

- The fat content of foods (e.g. potato chips and chocolate have a low GI but are high in fat).
- Eating a large range of foods, such as breads and cereals, fruit and vegetables, which are high in fibre and wholegrains, vitamins and minerals.
- The amount of food that you eat.

Glycaemic Index

Try to incorporate GI into your meals

Try to include at least one low GI food at each meal and snacks if you eat them.

Studies show that when a high GI food is combined with a low GI food, the complete meal results in having a moderate GI.

Further reading: Brand Miller J, Colagiuri S, Barclay A and Foster-Powell K, (2007) *The New Glucose Revolution – Diabetes and Pre Diabetes handbook*. www.glycemicindex.com

Factors that influence the GI of food:

- > Type of starch present – e.g. the type of starch in Doongara rice is digested slower than other rices
- > The physical form of the food – e.g. particle size, ripeness (the larger the particle size the more slowly the food is absorbed and the riper the fruit the more quickly it is absorbed)
- > The amount of cooking or processing (more cooking / processing usually speeds up absorption)
- > The amount of soluble fibre present (slows down absorption)
- > The type of sugar (fruit sugar is more slowly broken down than sucrose (table sugar))
- > Fat and protein content (fat and protein usually delay absorption)
- > The acidity of food – e.g. adding lemon juice or vinegar to food, delays absorption.

Glycaemic Load

When carbohydrate foods are eaten they cause blood glucose levels to rise and fall. Blood glucose levels are affected not only by the quality of carbohydrate food (glycaemic index) but also from the quantity of carbohydrate food ingested. When these two factors are combined (type & amount of carbohydrate) the term is called 'glycaemic load'. The glycaemic load of a food is calculated as follows:

$$\text{Glycaemic Load (GL)} = \frac{\text{GI} \times \text{Carbohydrate per serving}}{100}$$

E.g. 1 medium pear has a GI of 38 and contains 15g of carbohydrate

$$\text{GL} = \frac{38 \times 15}{100} = 5.7$$

The higher the glycaemic load the larger the effect on blood glucose levels. By choosing the lower GI option within each food group or category you automatically get the one with the lower GL so there is no need to calculate it each time. However always choose low GI healthy foods but think about how much of that food you are eating, too much of a low GI food can still raise blood glucose levels.

The GI symbol

Some food packages have a GI symbol (as shown) on the label. When you see the GI symbol, it means that the food has been tested at an accredited laboratory 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 have a low GI however they may not be an all-round healthy choice.

If a food without the GI symbol claims it is 'low GI', be cautious - it may not be. A recent Australian survey found that 7 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.

Further reading: www.glycemicindex.com, www.gisymbol.com.au. If you would like to know more about GI, please talk to your dietitian.

Glycaemic Index

Low GI (55 or less)	Moderate GI (56-69)	High GI (70 or more)
<p>Breakfast Cereals Rice bran & oat bran, All-Bran (original), Guardian, Sustain, rolled oats</p> <p>Breads & Cereals Dense whole grain / multi grain breads, most fruit loaves, pearl barley, spaghetti / macaroni, cracked wheat (Bulgur), buckwheat, fresh rice noodles, Doongara Clever Rice, Semolina, Long grain rice (Mahatma), Pearl couscous</p> <p>Vegetables Sweet corn, Carisma potatoes</p> <p>Legumes & Pulses Lentils, kidney beans, split peas, chick peas, baked beans</p> <p>Biscuits Jatz biscuits*, oat meal biscuits, Arnotts snack right, Ryvita with Pumpkin Oats and Sunflower & Oats</p> <p>Fruit Grapefruit, dried apricots, dried apples, pears, apricots, apples, plums, peaches, oranges, grapes, banana (average), prunes, dates, mango, kiwi fruit, mandarins, nectarines</p> <p>Dairy Products Yoghurt, milk, custard, Fruche, ice cream (choose low fat varieties)</p> <p>Spreads 100% fruit jam</p> <p>Sugars *** Fructose, Logicane Sugar</p> <p>Juices 100% fruit juices** (apple, orange, pineapple, grapefruit)</p>	<p>Breakfast Cereals Weet-Bix / Vita Brits, Just Right, natural muesli, Mini Wheats (plain), instant porridge, Special K**</p> <p>Breads & Cereals Regular couscous, rye & light rye bread, wholemeal bread, instant noodles (low fat), pita bread, crumpet, croissant*, Basmati rice, wild rice, dried rice noodles</p> <p>Vegetables Sweet potato</p> <p>Legumes & Pulses Broad Beans</p> <p>Biscuits Ryvita (original), Digestive biscuits, Shredded Wheatmeal, Milk Arrowroot biscuits</p> <p>Fruit Sultanas/raisins, pineapple, rockmelon, cherries, dried figs, fresh lychee, fresh paw paw</p> <p>Snack foods Popcorn (plain)</p> <p>Spreads Honey</p> <p>Sugars *** All other sugar (sucrose)</p>	<p>Breakfast Cereals Puffed wheat, Rice Bubbles, Sultana Bran, Bran Flakes, Corn Flakes, Coco Pops, Mini Wheats (fruit filled)</p> <p>Breads & Cereals White bread, dark rye bread, brown bread, English muffin, bagel, baguette, tapioca, jasmine rice</p> <p>Vegetables Most other potatoes</p> <p>Biscuits Water crackers, Sao*, rice crackers, rice cakes/corn thins, milk coffee biscuits</p> <p>Fruit Watermelon, lychee (canned in syrup)</p> <p>Snack Foods Pretzels</p> <p>Sugars *** Malt (maltose), glucose, Jelly beans</p> <p>Drinks Sports drinks (Gatorade), Lucozade</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>* These are foods high in fat. Use them occasionally.</p> <p>** These foods are low in fibre. Use them occasionally.</p> <p>*** All sugars contain the same amount of energy. Limit as part of a healthy diet.</p> <p>(Ref: The Low GI Shopper's Guide to GI Values' 2010 edition, Prof. Jennie Brand-Miller, Kaye Foster-Powell)</p> </div>

For more information

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