

The Glycaemic Index and Diabetes

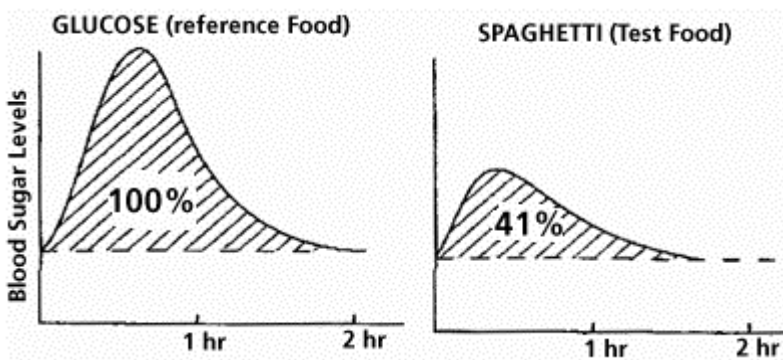
What is the Glycaemic Index (GI)?

The Glycaemic Index (GI) is a ranking of carbohydrate foods from 0-100 that tells us whether a food will raise blood glucose levels dramatically, moderately, or just a little. Carbohydrate foods are those that largely contain starches and sugars, eg cereals, potatoes, bread, fruit and milk.

How is the 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 and sugar). Different foods contain different amounts of carbohydrates, eg 3 boiled potatoes or 2 cups of pasta.

Carbohydrate foods that **break down slowly** release glucose gradually into the blood stream and 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 glucose and spaghetti:



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

Why is GI important?

There is a close relationship between GI and diabetes. **High GI foods** 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 control established diabetes as they produce lower blood glucose levels and therefore less insulin is required.

Low GI foods can also promote some weight loss and can make you feel more full which can assist in controlling appetite.

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

- The fat content of foods (eg potato crisps 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, vitamins and minerals.
- The amount of food that you eat (eg 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).

Try to incorporate GI into your meals

Try to include at least one low GI food at each meal. 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, Foster-Powell K, Colagiuri S. **The GI Factor – The glucose revolution**. 4th Edition, 2002. Hodder & Stoughton, Sydney

Food and it's GI Factors

Low GI (<55)	Moderate GI (55 – 70)	High GI (>70)
<p>Breakfast Cereals Rice bran & oat bran, All-Bran (all varieties), Guardian, Special K** Porridge</p> <p>Breads & cereals Whole grain/multi grain breads, fruit loaf, popcorn, pearl barley, pasta, noodles (low fat), cracked wheat (Bulgur), buckwheat</p> <p>Vegetables Sweet corn, sweet potato</p> <p>Legumes & Pulses Lentils, kidney beans, split peas, chick peas, baked beans</p> <p>Dairy Products Low fat varieties of yoghurt, milk, custard, ice cream</p> <p>Fruit Cherries, grapefruit, dried apricots & apples, pears, apples, plums, peaches (tinned/fresh), oranges, grapes, Kiwi fruit</p> <p>Spreads 100% fruit jam</p> <p>Juices Fruit juices (apple, orange, pineapple, grapefruit)**</p>	<p>Breakfast Cereals Sustain, shredded wheat, semolina, Weet-Bix/Vita Brits Just Right, natural muesli, Plain Mini Wheats, Bran buds</p> <p>Breads & Cereals Polenta, couscous, rye & light rye bread, Wholemeal bread, pita bread, crumpet, croissant*, Basmati or Doongara rice, muesli bars</p> <p>Biscuits Jatz biscuits*, Ryvita crispbread digestive, oatmeal, shredded wheatmeal, Milk Arrowroot biscuits</p> <p>Dairy Products Ice cream*</p> <p>Fruit Banana, sultanas, pineapple, rockmelon, apricots, mango,</p> <p>Spreads Honey</p> <p>Sugars Sugar (sucrose)</p>	<p>Breakfast Cereals Puffed wheat, rice bubbles, sultana bran, bran flakes, corn flakes, Mini Wheats (fruit filled)</p> <p>Breads & Cereals White bread, dark rye bread, English muffin, bagel, baguette Rice - white or brown, rice cakes tapioca</p> <p>Vegetables Potatoes, new boiled Broad beans</p> <p>Biscuits Water crackers, Sao* Milk Coffee biscuits</p> <p>Fruit Watermelon, dates dried, lychee (canned)</p> <p>Snack Foods Pretzels</p> <p>Drinks Non diet soft drinks, cordial, sports drinks</p> <p>Sugars Malt (maltose), glucose, jelly beans</p>

* These are foods high in fat. Use them occasionally. ** These foods are low in fibre. Use them occasionally.

Factors that influence the GI of food:

- ◆ type of starch present,
- ◆ the physical form of the food, ie 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 and processing -usually speeds up absorption,
- ◆ amount of water-soluble fibre present (slows down absorption),
- ◆ the type of sugar (fruit sugar is more slowly broken down than sucrose),
- ◆ fat and protein content (delays absorption),
- ◆ the acidity of food- eg adding lemon juice to food, delays its absorption



The GI Symbol has recently started appearing on certain food packages. Similar to the Heart Foundation Heart Tick program, the GI symbol is part of a licensing program where manufacturers pay for its display. When you see the GI symbol, it means that an approved GI testing facility has tested the food for its glycaemic index. However, the symbol itself does not indicate whether the food has a high,

medium or low GI. The actual GI value and its meaning will appear near the nutrition panel. It is therefore up to you to look for the actual GI value near the nutrition panel. Although the GI symbol may be a useful tool, it should be used in conjunction with the actual GI value (displayed near the nutrition panel) and with consideration of other nutritional factors. (See leaflet in this series about nutrition panel)