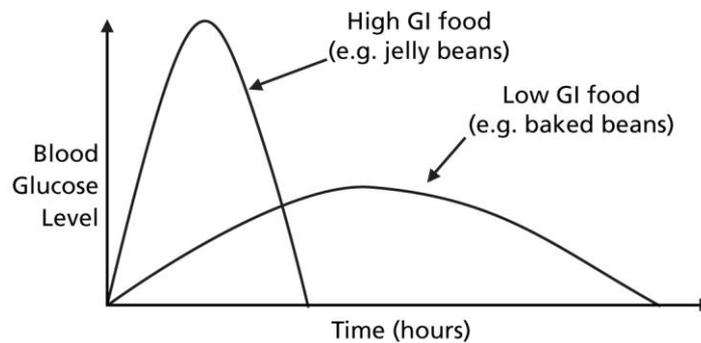


Glycaemic Index (GI) and Diabetes

What is the Glycaemic 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 Glycaemic 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



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

- > Amount of water-soluble fibre present – lowers the GI
- > The type of starch or 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 physical form of the food, e.g. ripeness – riper fruit has a higher GI
- > The amount of cooking and processing – usually increases the GI
- > The acidity of food, e.g. adding lemon juice to food decreases the GI

For more information

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This document has been reviewed
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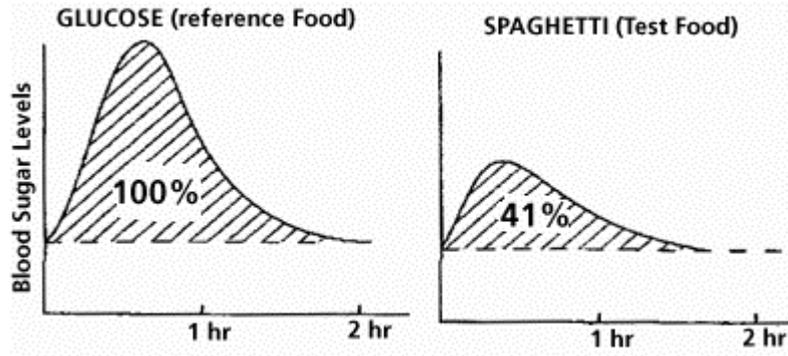
Government of South Australia

Women's and Children's
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What do the numbers mean?

Each food that has had its glycaemic 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

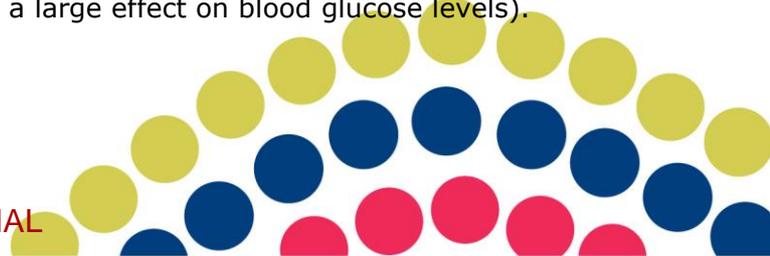
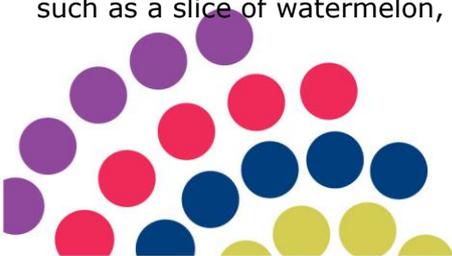
The table on the next page describes commonly eaten carbohydrate foods and their average GI rating.

- > When choosing carbohydrate foods, aim for low or moderate GI options whenever possible
- > If you do eat high GI foods, eat them with low GI foods or a source of protein whenever possible. This will bring down the average GI of the meal.

GI and healthy eating

While choosing low or moderate GI foods helps keep blood glucose levels stable, GI is not the only factor to consider when deciding if a food is a healthy food for every day. It is helpful to 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).



Common carbohydrate foods and their average GI rating

	Low GI (<55)	Moderate GI (55-70)	High GI (>70)
Breads	Dense wholegrain/ multigrain breads*, fruit loaf*, sourdough bread*, chapatti, <i>Bakers Delight Hi Fibre Lo GI white bread, Mission white corn tortilla, Country Life gluten free low GI white bread, Moores gluten and wheat free yeast free wholegrain bread</i>	Wholemeal bread*, hamburger bun, rye bread, croissant, crumpet, pita bread, wheat roti, chapatti, taco shell	White bread*, bagel, most gluten-free bread*, English muffin, baguette, scones, Lebanese bread
Breakfast cereals	<i>All Bran, Guardian, untoasted muesli*, whole oat porridge, Special K, Rice bran, Oat bran, Freedom Foods muesli, Sustain, Vogels Vita Pro breakfast cereal</i>	Un-toasted muesli, Just Right, <i>Weet- Bix, Vita Brits</i> shredded wheat*, <i>Mini Wheats 5 Grain, Light 'n' Tasty, Sultana Bran, Just Right</i> , instant oat porridge*	Bran Flakes, <i>Coco- Pops</i> , Puffed Wheat, <i>Rice Bubbles, Cornflakes, Cheerios, Crunchy Nut</i>
Grains	Barley, pasta (all types including white pasta), noodles*, semolina, bulgur, buckwheat, pearl barley, doongara 'Clever Rice', pearl couscous	Basmati rice, wild rice, brown rice, couscous, cornmeal, polenta, arborio rice, gnocchi	Calrose rice, jasmine rice, sushi rice, rice cakes, corn thins, tapioca, millet, gluten- free pasta made from corn, rice or maize*
Legumes	Beans (most types – kidney, soy, baked), split peas, chick peas, lentils		Broad beans
Starchy vegetables	Sweet corn, taro, parsnip, some potatoes (unpeeled* boiled carisma, nadine)	Sweet potato, pumpkin	Other potatoes, (i.e. desiree, pontiac, sebago)
Fruit	Grapefruit, peach, apricot, apple, pear, plum, orange, grapes, strawberries, banana, mango, dates, fruit juice, tinned fruit in juice	Sultanas, paw paw, raisins, pineapple, cherries	Watermelon, rockmelon
Dairy foods	Milk, yoghurt, custard, ice cream, soy milk	Condensed milk	Rice milk
Snack foods or treats	Oatmeal, <i>Arnott's Full O'Fruit, Arnott's Spicy Fruit Roll, Arnott's Snack Right, Ryvita</i> with grains, <i>Vita- Weat</i> , most homemade cakes, muffins and biscuits, <i>Milo</i> , chocolate, dense wholegrain museli bars*	Digestives, shredded wheatmeal, milk arrowroot, <i>Jatz, Ryvita, Nesquik</i> , commercially made cakes/muffins*	Plain sweet biscuits (eg. <i>Milk Arrowroot</i>), water crackers, <i>Sao</i> , rice crackers, burger rings, pretzels, roll- ups, lamingtons, commercially made cupcakes/cakes

Key: * = GI may vary depending on brand/varieties

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 glycaemic 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 glycaemic index and meet other nutritional requirements including being lower in energy (calories/kilojoules), total 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. So, it is important to remember that even 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.
- > Aim for low or moderate GI options whenever possible.
- > If you do eat high GI foods, eat them with low GI foods or a source of protein whenever possible.
- > The GI symbol on a label indicates that the food has a low GI. Foods without this symbol may still have a low GI.

More information

> Websites:

About the GI Symbol and low GI food ideas and recipes www.gisymbol.com,
Searchable GI database <http://www.glycemicindex.com>

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.

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.

