

# Carbohydrates and Glycaemic Index (GI)

## What are carbohydrates?



- Carbohydrates are found in a variety of food and drink, and provides the body with energy.
- Carbohydrates break down into glucose during digestion and increase blood glucose levels.
- Many foods containing carbohydrate also provide dietary fibre, vitamins and minerals.
- The amount and type of carbohydrate you eat will affect your blood glucose levels.

## Which foods contain carbohydrates?

### Healthy carbohydrate choices

- Wholegrain bread, Crispbread
- Wholegrain breakfast cereal
- Grains such as Barley, Quinoa
- Pasta, Noodles
- Rice
- Wholegrain flour, Wholemeal flour
- Lentils, Legumes
- Starchy vegetables including Potato, Sweet Potato and Corn
- Milk, Yoghurt
- Fruit



### Less healthy carbohydrate choices

- Biscuits
- Cakes, Pastry
- Sugar, Agave syrup, Rice malt syrup, Coconut sugar
- Jam, Honey, Maple syrup
- Chocolate, Confectionary
- Regular soft drink, Cordial
- Fruit juice
- Potato crisps, Corn chips
- Icecream, Custard



### Foods that contain little or no carbohydrate

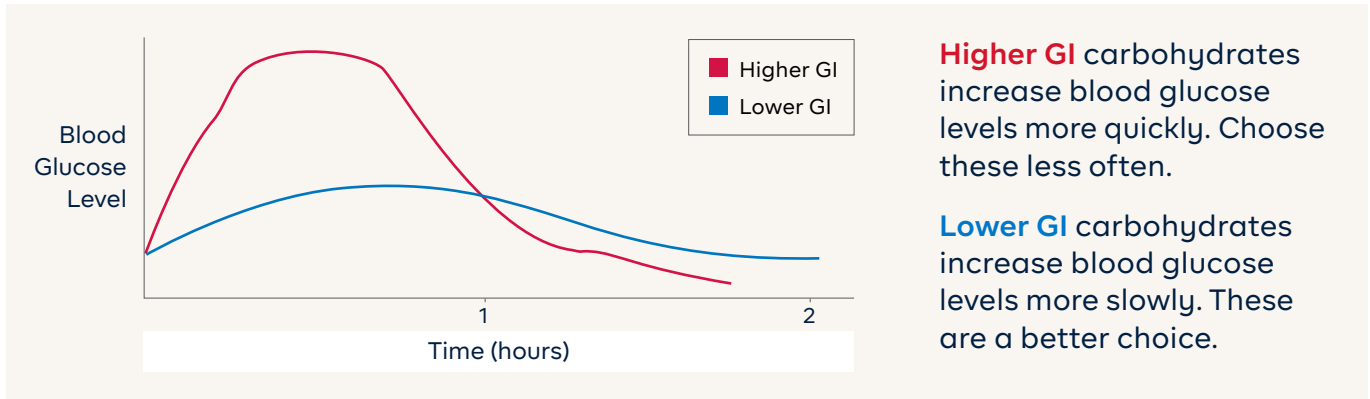
- Meat, Chicken, Fish, Tofu, Eggs
- Oil, Avocado, Nuts, Cheese
- Sugar free drinks, Artificial sweeteners
- Non-starch vegetables including: Lettuce, Tomato, Broccoli, Cauliflower, Zucchini, Eggplant, Bok choy, Okra, Carrots



# Carbohydrates and Glycaemic Index (GI)

## Glycaemic Index

The Glycaemic Index (GI) is a measure of how quickly or slowly a carbohydrate food is digested and increases blood glucose levels.







**Higher GI** carbohydrates increase blood glucose levels more quickly. Choose these less often.






**Lower GI** carbohydrates increase blood glucose levels more slowly. These are a better choice.

## Lower and higher glycaemic index choices


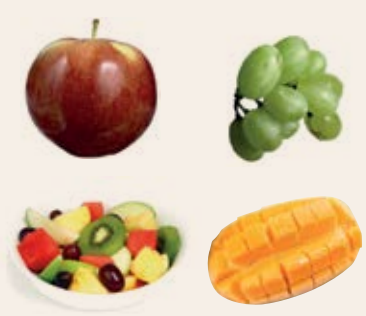

The following food amounts are guides for main meals and may be individualised by your Dietitian. Speak to your Dietitian about what is right for you.

Food	Lower GI ↓	Higher GI ↑
<p><b>Breakfast cereal</b></p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p>½ cup muesli or oats</p> </div> <div style="text-align: center;">  <p>1 cup flake type cereal or 2 cereal biscuits</p> </div> </div>	<ul style="list-style-type: none"> <li>• Untoasted muesli</li> <li>• Rolled oats or steel cut oats (Porridge)</li> <li>• Wholegrain or Multigrain high fibre cereals</li> <li>• Multigrain Weetbix</li> </ul> <p>See Supermarket Guide for suitable products</p>	<ul style="list-style-type: none"> <li>• Sultana Bran</li> <li>• Just Right</li> <li>• Instant oats (Porridge)</li> <li>• Just Right</li> <li>• Cornflakes</li> <li>• Rice Bubbles</li> <li>• Puffed wheat</li> </ul>
<p><b>Bread</b></p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p>1-2 slices</p> </div> <div style="text-align: center;">  <p>1 medium wrap or 1-2 small roti / chapatti</p> </div> </div>	<ul style="list-style-type: none"> <li>• Multigrain and seeds</li> <li>• Traditional sourdough</li> <li>• Pumpernickel</li> <li>• High Fibre Low GI White bread</li> </ul> <p><b>Flatbreads:</b></p> <ul style="list-style-type: none"> <li>• Wholemeal pita</li> <li>• Mission Low GI wrap and</li> <li>• White Corn tortilla</li> <li>• Roti / Naan / Chappati made with whole wheat atta or chickpea flour or soy flour</li> </ul>	<ul style="list-style-type: none"> <li>• White</li> <li>• Wholemeal</li> <li>• Dark or Light rye</li> <li>• Bagel</li> <li>• Turkish, Focaccia</li> <li>• White pita</li> <li>• Crumpets</li> <li>• English muffins</li> <li>• White or Wholemeal flour based Roti / Naan / Chapatti</li> </ul>

# Carbohydrates and Glycaemic Index (GI)

Food	Lower GI ↓	Higher GI ↑
<p><b>Pasta and Noodles</b></p>  <p>1 cup cooked or 50g dry</p>	<ul style="list-style-type: none"> <li>• Wheat pasta</li> <li>• Vermicelli</li> <li>• Mung bean noodles</li> <li>• Soba noodles</li> <li>• Fresh rice noodles</li> <li>• Udon</li> <li>• Hokkien</li> <li>• Buckwheat noodles</li> </ul>	<ul style="list-style-type: none"> <li>• Corn pasta, Rice pasta</li> <li>• Potato gnocchi</li> <li>• Instant noodles</li> <li>• Canned spaghetti</li> </ul>
<p><b>Rice</b></p>  <p>2/3 cup cooked or 30g dry</p>	<ul style="list-style-type: none"> <li>• White or Brown long grain such as Basmati, Mahatma,</li> <li>• Doongara</li> <li>• Wild</li> <li>• Moolgiri</li> <li>• Black, Red</li> <li>• Chia and quinoa rice blends</li> <li>• Sushi made from traditional</li> <li>• Japanese rice</li> </ul>	<ul style="list-style-type: none"> <li>• Jasmine</li> <li>• White or brown medium grain</li> <li>• Arborio (risotto)</li> <li>• White rice congee</li> </ul>
<p><b>Grains</b></p>  <p>1 cup cooked</p>	<ul style="list-style-type: none"> <li>• Quinoa, Barley</li> <li>• Bulghur (cracked wheat)</li> <li>• Pearl cous cous or Israeli</li> <li>• cous cous</li> <li>• Buckwheat, Freekeh</li> <li>• Semolina</li> <li>• Teff</li> </ul>	<ul style="list-style-type: none"> <li>• Polenta</li> <li>• Cous cous</li> </ul>
<p><b>Lentils and Legumes</b></p>  <p>1 ½ cup cooked or canned</p>	<ul style="list-style-type: none"> <li>• All dried or canned including Kidney beans, Chickpeas, Brown lentils, Baked beans</li> </ul>	
<p><b>Milk and Yoghurt</b></p>  <p>1 cup milk &amp; yoghurt</p>	<ul style="list-style-type: none"> <li>• Milk, Yoghurt</li> <li>• Soy milk, almond milk, soy yoghurt — choose products that have added calcium</li> </ul> <p><b>Note:</b> Choose reduced fat, reduced sugar varieties for heart health.</p>	<ul style="list-style-type: none"> <li>• Rice milk</li> <li>• Oat milk</li> <li>• Sweetened condensed milk</li> </ul>

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<p><b>Starchy vegetables</b></p>  <p>200g potato      1 large cob or 1 cup kernels</p>	<p><b>Potato:</b></p> <ul style="list-style-type: none"> <li>Sweet potato orange flesh</li> <li>Yam</li> <li>Nicola, Carisma potato</li> </ul> <p><b>Note:</b></p> <ul style="list-style-type: none"> <li>Eat skin on potato to lower GI</li> </ul> <p><b>Corn:</b></p> <ul style="list-style-type: none"> <li>Corn cob</li> <li>Corn kernels</li> </ul>	<ul style="list-style-type: none"> <li>Potato: all other white varieties such as Desiree, New, Pontiac,</li> <li>Sebago</li> <li>Sweet potato purple skin</li> </ul> <p><b>Note:</b></p> <p>Most other salad and stir fry vegetables contain very little or no carbohydrate and do not have a GI value.</p> <p>Some semi-starch vegetables, for example pumpkin, peas, carrot, parsnip, broad beans and beetroot have a GI value, but rarely increase blood glucose unless eaten in large amounts more than 200g.</p>
<p><b>Fruit</b></p>  <p>1 serve of fruit is similar to a fist size or 1 cup chopped</p>	<ul style="list-style-type: none"> <li>Apple, Pear</li> <li>Banana, lightly ripe</li> <li>Nectarine, Peach</li> <li>Apricot, Plum</li> <li>Orange, Mandarin, Grapefruit</li> <li>Berries</li> <li>Kiwi fruit</li> <li>Grapes</li> <li>Pineapple</li> <li>Paw paw, Mango</li> <li>Figs</li> </ul> <p><b>Note:</b></p> <p>Strawberries, raspberries, blackberries and passionfruit have less carbohydrate compared to other fruits and have less effect on blood glucose levels.</p>	<ul style="list-style-type: none"> <li>Cantaloupe</li> <li>Watermelon</li> <li>Lychee (canned in syrup)</li> </ul> <p><b>Note:</b></p> <ul style="list-style-type: none"> <li>Fresh fruit is the best option.</li> </ul> <p><b>Dried fruit:</b></p> <ul style="list-style-type: none"> <li>Eat only small amounts occasionally.</li> </ul> <p><b>Canned fruit:</b></p> <ul style="list-style-type: none"> <li>Choose lower GI fruit canned in natural juice and drain excess juice.</li> </ul> <p><b>Fruit juice:</b></p> <ul style="list-style-type: none"> <li>Small amounts less than 150ml.</li> </ul>
<p><b>Crisp bread</b></p>  <p>2-4 crispbread</p>	<ul style="list-style-type: none"> <li>Vita-Weat Pumpkin Seed and Grains</li> <li>Ryvita Multigrain</li> </ul>	<ul style="list-style-type: none"> <li>Rice and water crackers</li> <li>Salada, Sao</li> <li>Corn thins, Rice cakes</li> <li>Kavli, Cruskits, Matza</li> <li>Pretzels</li> </ul>

## Tips to lower the GI



✓ **Acidity will lower the GI of a meal.**

Add vinegar or lemon juice to meals as a dressing.

✓ **Fibre, particularly soluble fibre, can lower GI.**

Add psyllium husk to breakfast cereal; add salad vegetables to a sandwich; add lentils to soup; choose high-fibre wholegrain bread and cereal.

✓ **Cooking then cooling rice or potato.**

Try in a rice or potato salad.

✓ **Eating protein as part of a meal can lower the GI.**

Combine fish, lean meat, skinless chicken, egg or tofu with a lower GI carbohydrate food and plenty of low carbohydrate vegetables. Refer to the Baker Institute's 'Portion Plate Guide' fact sheet for more information.

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## Lower GI meal and snack examples

Spread your intake of carbohydrate food and drinks at meals and snacks throughout the day. Some meal and snack examples are listed below. Lower GI choices are in bold font.

### Breakfast



- ½ cup untoasted **muesli** with 100g reduced fat, no added sugar **yoghurt** and handful of mixed nuts and seeds
- 2 slices **multigrain bread** served with 2 boiled eggs, tomato, mushrooms and spinach
- 1 cup cooked **traditional rolled oats** made with reduced fat milk and topped with ½ **banana**
- ¾ cup Kellogg's **Guardian** with reduced fat **milk**
- Smoothie: 200ml reduced fat **milk**, ½ cup **berries** and 100g reduced fat **yoghurt**

### Lunch / Light meal



- Sandwich: 2 slices **multigrain bread**, skinless chicken and plenty of salad vegetables
- Soup: 1 cup cooked **barley**, tomato broth and plenty of low carbohydrate vegetables
- Wrap: 1 medium size **low GI wrap** or **wholemeal pita** filled with 1/2 cup **four-bean mix**, spinach, cucumber and capsicum
- Warm Salad: 1 cup canned **kidney beans**, canned tuna and cooked frozen vegetables

### Dinner / Main meal



- 1 cup cooked **spaghetti** and lean meat bolognese sauce, with a side salad
- Grilled salmon with 200g baked **sweet potato** and steamed green vegetables
- Skinless chicken and vegetable stirfry with 1 cup cooked **soba noodles**
- Tofu and low starch vegetable curry served with 1 cup cooked **basmati rice**

### Snacks



- Fruit: 1 medium **apple** or 2 small **kiwi fruit** or 1 small or half large **banana**
- 200g reduced fat no added sugar **yoghurt**
- 1 bar **Carmen's Original Fruit Free Muesli Bar**
- 2-4 biscuits **Vita-Weat Pumpkin Seed and Grains** with 1-2 slices of reduced fat cheese
- The Happy Snack Company **Roasted Fava Beans** or **Roasted Chickpeas**