

# ▶ Glycemic Index

How to use the glycemic index to eat healthy

# Outline

- ▶ Carbohydrate Overview
- ▶ What is the glycemic index
- ▶ Glycemic load
- ▶ How to use the glycemic index to make healthy choices

# Carbohydrates

- ▶ Three basic forms
  - ▶ Sugars
  - ▶ Starches
  - ▶ Fiber
- ▶ Sugars and starches are all digested and broken down into glucose
- ▶ Blood glucose needs insulin to be absorbed into cells
  - ▶ Cells use glucose as energy
  - ▶ Glucose can be stored for future use if it's not needed immediately

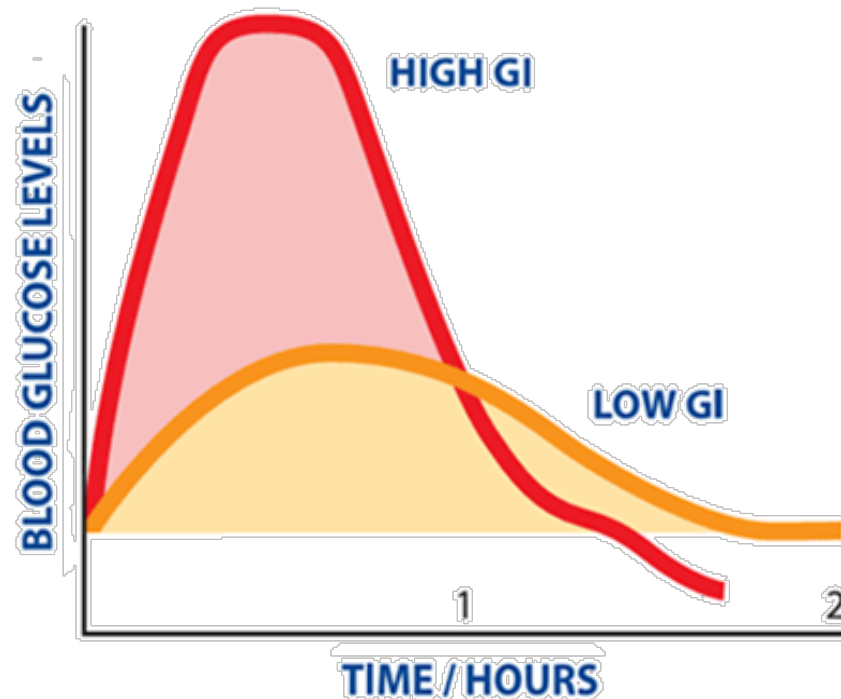


# Glycemic Index

- ▶ A value assigned to carbohydrate containing foods based on how slowly or how quickly those foods cause increases in blood glucose levels

# Glycemic Index

- ▶ The measure ranks food on a scale of zero to 100
  - ▶ High: 70+
  - ▶ Mid: 56 - 69
  - ▶ Low: 55 or less



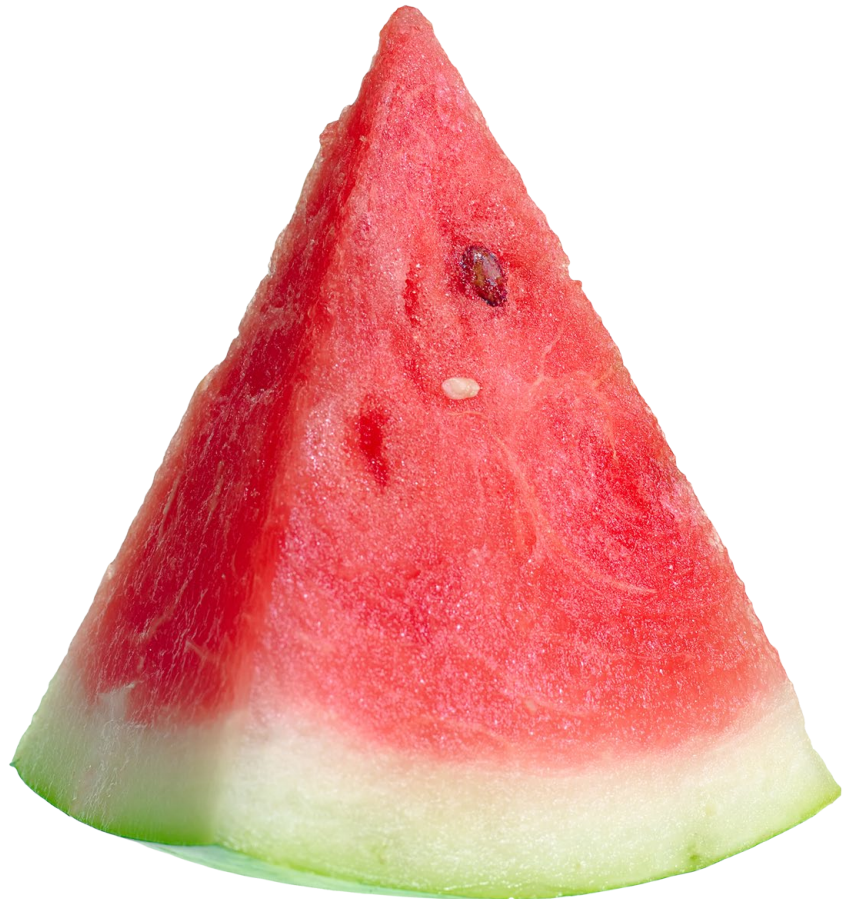
# Glycemic Index Diet

- ▶ **Goal:** Choose carbohydrate-containing foods that are less likely to cause large increases in blood sugar levels
- ▶ Eating low glycemic foods more frequently has been shown to:
  - ▶ Promote weight loss
  - ▶ Lower cholesterol levels
  - ▶ Control appetite



# Limitations

- ▶ A food's GI ranking only applies when a food is consumed on an empty stomach without any other type of food.
  - ▶ Pairing foods together changes the rate of blood sugar elevation
- ▶ GI values do not correlate to nutrient content



**GI = 76**



**GI = 76**



# Glycemic Load

# Glycemic Load

$$GL = GI \times \text{carbohydrate} / 100$$

- ▶ **Low GL: 0 - 10**
- ▶ **Medium GL: 1 - 19**
- ▶ **High GL: 20+**



GI = 76  
GL = 8



GI = 76  
GL = 17

# Making Healthy Food Choices with the Glycemic Index

[glycemicindex.com](http://glycemicindex.com)

### HIGH CARBOHYDATE FOODS

White wheat bread	75 ± 2
Whole wheat/whole meal bread	74 ± 2
White rice, boiled	73 ± 4
Unleavened wheat bread	70 ± 5
Brown rice, boiled	68 ± 4
Couscous	65 ± 4
Wheat roti	62 ± 3
Udon noodles	55 ± 7
Rice noodles	53 ± 7
Specialty grain bread	53 ± 2
Chapatti	52 ± 4
Sweet corn	52 ± 5
Spaghetti, white	49 ± 2
Spaghetti, whole meal	48 ± 5
Corn tortilla	46 ± 4
Barley	28 ± 2

### LEGUMES

Lentils	32 ± 5
Chickpeas	28 ± 9
Kidney beans	24 ± 4
Soya beans	16 ± 1

### BREAKFAST CEREALS

Cornflakes	81 ± 6
Instant oat porridge	79 ± 3
Rice porridge/congee	78 ± 9
Wheat flake biscuits	69 ± 2
Millet porridge	67 ± 5
Muesli	57 ± 2
Porridge, rolled oats	55 ± 2

### DAIRY PRODUCTS AND ALTERNATIVES

Rice milk	86 ± 7
Ice cream	51 ± 3
Yogurt, fruit	41 ± 2
Milk, full fat	39 ± 3
Milk, skim	37 ± 4
Soy milk	34 ± 4

### SNACK PRODUCTS

Rice crackers/crisps	87 ± 2
Popcorn	65 ± 5
Soft drink/soda	59 ± 3
Potato crisps	56 ± 3
Chocolate	40 ± 3

### VEGETABLES

Potato, instant mash	87 ± 3
Potato, boiled	78 ± 4
Pumpkin, boiled	64 ± 7
Potato, french fries	63 ± 5
Sweet potato, boiled	63 ± 6
Plantain/green banana	55 ± 6
Taro, boiled	53 ± 2
Vegetable soup	48 ± 5
Carrots, boiled	39 ± 4

### FRUIT AND FRUIT PRODUCTS

Watermelon, raw	76 ± 4
Pineapple, raw	59 ± 8
Mango, raw	51 ± 5
Banana, raw	51 ± 3
Orange juice	50 ± 2
Strawberry jam/jelly	49 ± 3
Peaches, canned	43 ± 5
Orange, raw	43 ± 3
Dates, raw	42 ± 4
Apple juice	41 ± 2
Apple, raw	36 ± 2

HIGH CARBOHYDATE FOODS	
White wheat bread	75 ± 2
Whole wheat/whole meal bread	74 ± 2
White rice, boiled	73 ± 4
Unleavened wheat bread	70 ± 5
Brown rice, boiled	68 ± 4
Couscous	
Wheat roti	
Udon noodles	
Rice noodles	
Specialty grain bread	
Chapatti	
Sweet corn	
Spaghetti, white	
Spaghetti, whole meal	
Corn tortilla	46 ± 4
Barley	28 ± 2

LEGUMES	
Lentils	32 ± 5
Chickpeas	28 ± 9
Kidney beans	24 ± 4
Soya beans	16 ± 1

BREAKFAST CEREALS	
Cornflakes	81 ± 6
Instant oat porridge	79 ± 3
Rice porridge/congee	78 ± 9
Wheat flake biscuits	69 ± 2
Millet porridge	67 ± 5
Muesli	57 ± 2

SNACK PRODUCTS	
Rice crackers/crisps	87 ± 2
Popcorn	65 ± 5
Soft drink/soda	59 ± 3
Potato crisps	56 ± 3
Chocolate	40 ± 3

VEGETABLES	
Potato, instant mash	87 ± 3
Potato, boiled	78 ± 4
Pumpkin, boiled	64 ± 7
Potato, french fries	63 ± 5
Sweet potato, boiled	63 ± 6
Plantain/green banana	55 ± 6
...	53 ± 2
...	48 ± 5
...	39 ± 4

FRUIT PRODUCTS	
...	76 ± 4
...	59 ± 8
...	51 ± 5
...	51 ± 3
Orange juice	50 ± 2
Strawberry jam/jelly	49 ± 3
Peaches, canned	43 ± 5
Orange, raw	43 ± 3
Dates, raw	42 ± 4
Apple juice	41 ± 2
Apple, raw	36 ± 2

**White Rice = 73**  
**vs**  
**Barley = 28**

### HIGH CARBOHYDATE FOODS

White wheat bread	75 ± 2
Whole wheat/whole meal bread	74 ± 2
White rice, boiled	73 ± 4
Unleavened wheat bread	70 ± 5
Brown rice, boiled	68 ± 4
Couscous	
Wheat roti	
Udon noodles	
Rice noodles	
Specialty grain bread	
Chapatti	
Sweet corn	
Spaghetti, white	
Spaghetti, whole meal	
Corn tortilla	46 ± 4
Barley	28 ± 2

### LEGUMES

Lentils	32 ± 5
Chickpeas	28 ± 9
Kidney beans	24 ± 4
Soya beans	16 ± 1

### BREAKFAST CEREALS

Cornflakes	81 ± 6
Instant oat porridge	79 ± 3
Rice porridge/congee	78 ± 9
Wheat flake biscuits	69 ± 2
Millet porridge	67 ± 5
Muesli	57 ± 2

### SNACK PRODUCTS

Rice crackers/crisps	87 ± 2
Popcorn	65 ± 5
Soft drink/soda	59 ± 3
Potato crisps	56 ± 3
Chocolate	40 ± 3

### VEGETABLES

Potato, instant mash	87 ± 3
Potato, boiled	78 ± 4
Pumpkin, boiled	64 ± 7
Potato, french fries	63 ± 5
Sweet potato, boiled	63 ± 6
Plantain/green banana	55 ± 6
	53 ± 2
	48 ± 5
	39 ± 4

### DRINK PRODUCTS

	76 ± 4
	59 ± 8
	51 ± 5
	51 ± 3
Orange juice	50 ± 2
Strawberry jam/jelly	49 ± 3
Peaches, canned	43 ± 5
Orange, raw	43 ± 3
Dates, raw	42 ± 4
Apple juice	41 ± 2
Apple, raw	36 ± 2

**Baked Potato = 69**  
**VS**  
**Sweet Potato = 48**

### HIGH CARBOHYDATE FOODS

White wheat bread	75 ± 2
Whole wheat/whole meal bread	74 ± 2
White rice, boiled	73 ± 4
Unleavened wheat bread	70 ± 5
Brown rice, boiled	68 ± 4
Couscous	
Wheat roti	
Udon noodles	
Rice noodles	
Specialty grain bread	
Chapatti	
Sweet corn	
Spaghetti, white	
Spaghetti, whole meal	
Corn tortilla	46 ± 4
Barley	28 ± 2

### LEGUMES

Lentils	32 ± 5
Chickpeas	28 ± 9
Kidney beans	24 ± 4
Soya beans	16 ± 1

### BREAKFAST CEREALS

Cornflakes	81 ± 6
Instant oat porridge	79 ± 3
Rice porridge/congee	78 ± 9
Wheat flake biscuits	69 ± 2
Millet porridge	67 ± 5
Muesli	57 ± 2

### SNACK PRODUCTS

Rice crackers/crisps	87 ± 2
Popcorn	65 ± 5
Soft drink/soda	59 ± 3
Potato crisps	56 ± 3
Chocolate	40 ± 3

### VEGETABLES

Potato, instant mash	87 ± 3
Potato, boiled	78 ± 4
Pumpkin, boiled	64 ± 7
Potato, french fries	63 ± 5
Sweet potato, boiled	63 ± 6
Plantain/green banana	55 ± 6
	53 ± 2
	48 ± 5
	39 ± 4

### FRUIT PRODUCTS

	76 ± 4
	59 ± 8
	51 ± 5
	51 ± 3
Orange juice	50 ± 2
Strawberry jam/jelly	49 ± 3
Peaches, canned	43 ± 5
Orange, raw	43 ± 3
Dates, raw	42 ± 4
Apple juice	41 ± 2
Apple, raw	36 ± 2

**Pineapple= 66**  
**VS**  
**Strawberries= 40**



HIGH CARBOHYDATE FOODS	
White wheat bread	75 ± 2
Whole wheat/whole meal bread	74 ± 2
White rice, boiled	73 ± 4
Unleavened wheat bread	70 ± 5
Brown rice, boiled	63 ± 6
Couscous	55 ± 6
Wheat roti	53 ± 2
Udon noodles	48 ± 5
Rice noodles	39 ± 4
Specialty grains	
Chapatti	
Sweet corn	
Spaghetti, whole wheat	
Spaghetti, white	
Corn tortilla	
Barley	

BREAKFAST CEREALS	
Cornflakes	81 ± 6
Instant oat porridge	79 ± 3
Rice porridge/congee	78 ± 9
Wheat flake biscuits	69 ± 2

VEGETABLES	
Potato, instant mash	87 ± 3
Potato, boiled	78 ± 4
Pumpkin, boiled	64 ± 7
Potato, french fries	63 ± 5

**Instant Oatmeal= 83**  
**VS**  
**Multigrain Instant Oatmeal= 40**

LEGUMES	
Lentils	32 ± 5
Chickpeas	28 ± 9
Kidney beans	24 ± 4
Soya beans	16 ± 1

SNACK PRODUCTS	
Rice crackers/crisps	87 ± 2
Popcorn	65 ± 5
Soft drink/soda	59 ± 3
Potato crisps	56 ± 3
Chocolate	40 ± 3

FRUIT PRODUCTS	
Peaches, canned	76 ± 4
Orange, raw	59 ± 8
Dates, raw	51 ± 5
Apple juice	51 ± 3
Apple, raw	50 ± 2
	49 ± 3
Peaches, canned	43 ± 5
Orange, raw	43 ± 3
Dates, raw	42 ± 4
Apple juice	41 ± 2
Apple, raw	36 ± 2

HIGH CARBOHYDATE FOODS	
White wheat bread	75 ± 2
Whole wheat/whole meal bread	74 ± 2
White rice, boiled	73 ± 4
Unleavened wheat	70 ± 5

BREAKFAST CEREALS	
Cornflakes	81 ± 6
Instant oat porridge	79 ± 3
Rice porridge/congee	78 ± 9
Wheat flake biscuits	69 ± 2

VEGETABLES	
Potato, instant mash	87 ± 3
Potato, boiled	78 ± 4
Pumpkin, boiled	64 ± 7
Potato, french fries	63 ± 5

**Chewy<sup>®</sup> Chocolate Chip  
 Granola Bar= 78**  
**VS**  
**Dark Chocolate Square= 23**

LEGUMES	
Lentils	32 ± 5
Chickpeas	28 ± 9
Kidney beans	24 ± 4
Soya beans	16 ± 1

SNACK PRODUCTS	
Rice crackers/crisps	87 ± 2
Popcorn	65 ± 5
Soft drink/soda	59 ± 3
Potato crisps	56 ± 3
Chocolate	40 ± 3

Peaches, canned	43 ± 5
Orange, raw	43 ± 3
Dates, raw	42 ± 4
Apple juice	41 ± 2
Apple, raw	36 ± 2

# Summary

- ▶ All carbohydrates get broken down to glucose and are transported into your blood stream
  - ▶ With the help of insulin glucose can be absorbed by cells and used for fuel
- ▶ The Glycemic Index is a value assigned to carbohydrate containing foods based on how slowly or how quickly those foods cause increases in blood glucose levels
  - ▶ The Glycemic Load value combines portion size and GI into one number
- ▶ Choose foods that have a low GI or GL value
  - ▶ These foods likely have more fiber, protein, or fat and will not spike your blood sugar levels

# Sources

- ▶ <https://www.diabetes.co.uk/diet/glycemic-load.html>
- ▶ <https://www.mayoclinic.org/healthy-lifestyle/nutrition-and-healthy-eating/in-depth/glycemic-index-diet/art-20048478>
- ▶ <https://www.eatright.org/food/nutrition/dietary-guidelines-and-myplate/what-is-glycemic-index>
- ▶ <https://www.glycemicindex.com/>
- ▶ <https://lpi.oregonstate.edu/mic/food-beverages/glycemic-index-glycemic-load#glycemic-load>