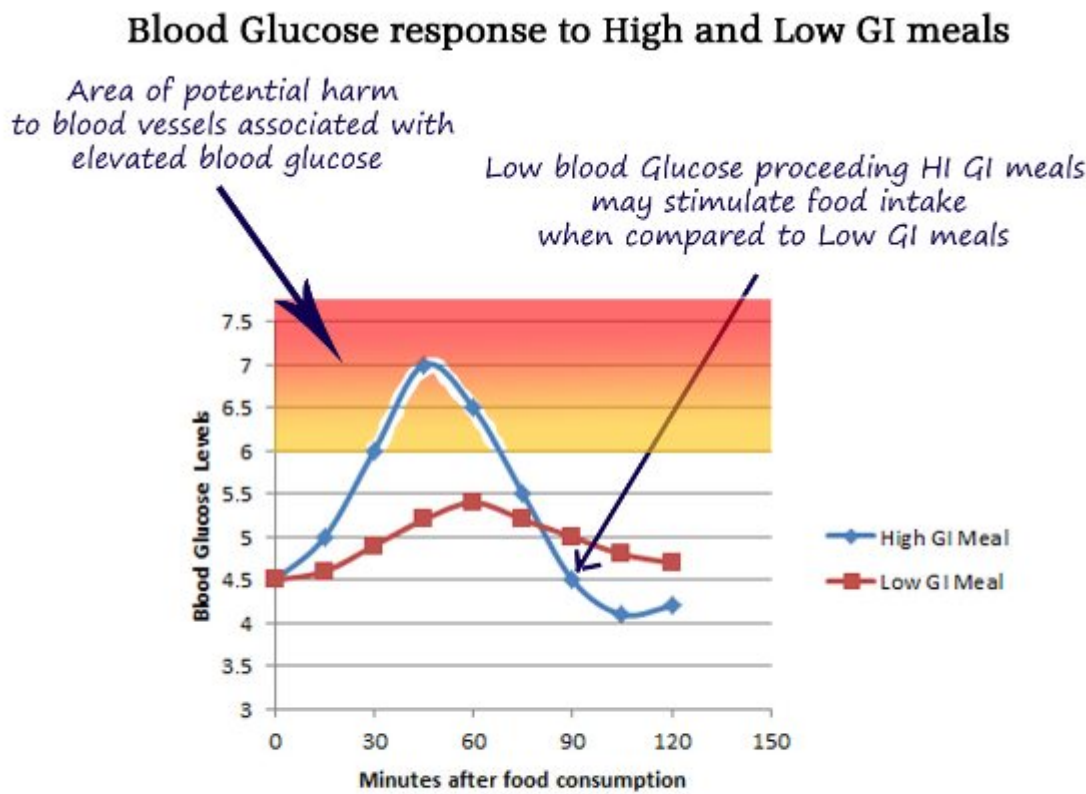


Glycaemic Index (GI) and Weight Gain

Glycaemic Index (GI) refers to the rate of the release of glucose into the blood stream following the consumption of the given carbohydrate. The Glycaemic Index is a scale from 0-100 with pure glucose assigned a value of 100. High GI carbohydrates produce rapid rises in blood glucose resulting in an overall higher blood glucose value being reached. These high blood glucose values stimulate insulin release. Insulin increases the rate at blood glucose disposal. This is achieved by increasing both the rate of glucose entering muscle cells as well as the rate at which glucose is converted to fat. High GI foods tend to produce a fall in blood glucose below pre consumption values. This drop can result in tiredness and possible increased food consumption to raise blood glucose



Lower GI foods produce a slower rise in blood glucose, resulting in stable blood glucose levels. This stable blood glucose level in theory should prevent glucose conversion in fats, whilst simultaneously sparing protein due to a decreased need for protein conversion into glucose in between feeding. A study of high GI and low GI diets in mice found this to be the case, with mice on high GI diets having higher body fat levels and lower muscle mass concentrations (1).

Research on Glycaemic Index and Weight Gain

Observational studies looking at participants habitual food intakes show trends towards lower GI foods and decreases in body fat content or BMI values (2,3).

Results from controlled trials where Low GI foods are compared to High GI show a trend of decreased body fat levels in lower GI groups (4,5). Some studies question this result. Whilst GI may influence weight gain, the value of this influence is thought to be low. Any rapid delivery of fuels will help to promote fat gain, if energy expenditure fails to meet the demands of the supplied foods. Changing from high GI to low GI may result in small reductions in energy intake promoting small weight loss.

Low GI foods tend to contain higher dietary fibre, this higher fibre level offers a possible explanation for the health benefits associated with Lower GI foods. Dietary fibre has been linked with increased satiety and decreased body weight and decreased diabetes and heart disease risk

Glycaemic Index and Health

Research shows Low GI foods have a benefit in lowering blood cholesterol and plasma lipids (4,5,6). This decrease in Lipids and decreased blood glucose excursions may help reduce the risk of heart disease. Research though is inconclusive

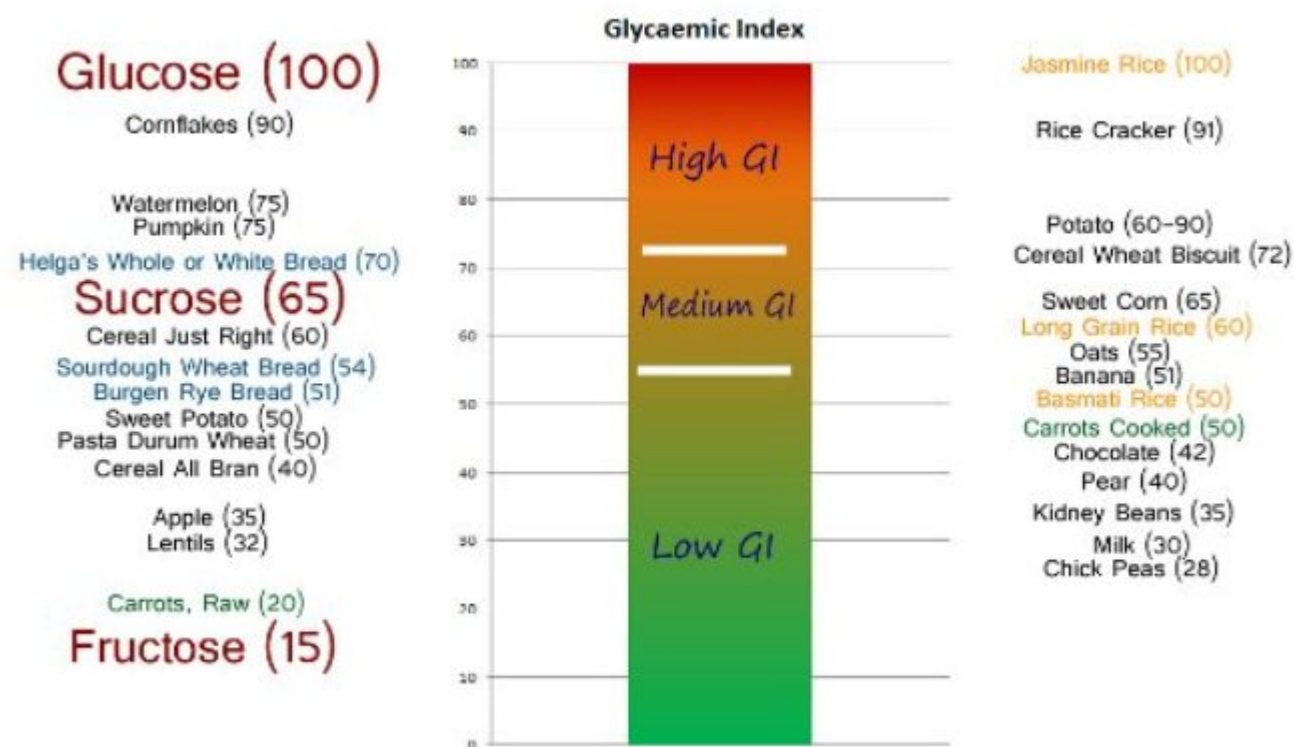
Glyceamic Index of common Foods

Knowing the Glycaemic Index of common foods can help you make educated decisions about meal choices.

What factors effect the Glycaemic Index of Foods?

Glycemic Index is effected by several factors some of which are listed below

- **Fat and Protein content** - Including Fats and Protein with carbohydrates slightly lowers the GI of the meal
- **Composition of the Starch** - Starch is made up of the molecules Amylose and Amylopectin. Foods high in Amylose such as lentils and beans have lower GI values
- **Fibre** - Soluble fibre increases water absorption in the intestines slowing carbohydrate absorption
- **Level of Cooking** - Cooking foods for longer slightly raises the foods GI. El Dente pasta has a lower GI then that of over-cooked pasta
- **Refining of Food** - The level of refining of grain products tends to increase the GI of the food. Stone milled flour has lower GI then more higher refined flours.



Sugar, Fructose and the Glycaemic Index

Glucose, Sucrose and Fructose are types of sugar or carbohydrates. Sucrose, typically known as table sugar contains one part glucose and one part fructose. Glucose has a GI of 100 and is the reference point for testing other foods GI values. Fructose which is typically found in fruits has a GI of 15. Foods containing fructose will have lower GI values then those containing glucose. Fructose enters the liver and is converted to both glucose and fats. Foods containing fructose may serve a benefit to health through stabilizing blood glucose levels when eaten in moderation. If over eaten these foods can cause increases in triglycerides and insulin resistance leading to other health complications.

Remember Glycaemic Index is just one aspect of healthy eating. Eating high sugar foods such as chocolate although beneficial for GI will still provide large amount of energy due to high energy densities. The health risks of high sugar intakes should also be considered.



Key Points

Lower GI foods have possible benefits for reducing body fat levels, along with improving cholesterol profiles. This may be a result of the higher fibre content found in low GI foods or to improved satiety and blood glucose regulation. In theory lower GI foods will decrease the conversion carbohydrates into triglycerides (fats) aiding weight loss



- Don't overeat High GI foods, instead mix meals so that lower GI foods are eaten within the same meal

Glycaemic Index - Raw v's Cooked

	Cooked	Raw
Carrot	20	50
	Al Dente	Overcooked
pasta	40	60

- When snacking eat foods in there rawer state. Cook vegetables such as broccoli, peas, carrots and cauliflower until crispy not over-cooked
- Try lower GI versions of bread, rice and cereal

Glycaemic Index - Rice

Rice	Jasmine	Long Grain	Basmati	Doongara Clever Rice
	100	60	50	48

Glycaemic Index - Breads

Bread	White	Wholemeal	Stoneground wholemeal	Sourdough	Rye (burgun)
	72	72	59	54	50

Glycaemic Index - Cereals

Cereal	Cornflakes	Wheat biscuit	Just Right	oats	All Bran
	85	70	60	55	40

- Eat lower GI snacks in between meals. Try Fruits, yogurts, mixed beans, left over pastas and vegetables
- Include small to moderate amounts of protein or fats with carbohydrates

1. Pawlak, Dorota B., et al. "Effects of dietary glycaemic index on adiposity, glucose homoeostasis, and plasma lipids in animals. Comment." Lancet 364.9436 (2004): 778-785.
2. Murakami, K., et al. "Dietary fiber intake, dietary glycemic index and load, and body mass index: a cross-sectional study of 3931 Japanese women aged 18–20 years." European journal of clinical nutrition 61.8 (2007): 986-995
3. Hare-Bruun, Helle, Anne Flint, and Berit L. Heitmann. "Glycemic index and glycemic load in relation to changes in body weight, body fat distribution, and body composition in adult Danes." The American journal of clinical nutrition 84.4 (2006): 871-879.
4. Bouché, Clara, et al. "Five-week, low–glycemic index diet decreases total fat mass and improves plasma lipid profile in moderately overweight nondiabetic men." Diabetes Care 25.5 (2002): 822-828.
5. Sloth, Birgitte, et al. "No difference in body weight decrease between a low-glycemic-index and a high-glycemic-index diet but reduced LDL cholesterol after 10-wk ad libitum intake of the low-glycemic-index diet." The American journal of clinical nutrition 80.2 (2004): 337-347
6. Liu, Simin, et al. "Dietary glycemic load assessed by food-frequency questionnaire in relation to plasma high-density-lipoprotein cholesterol and fasting plasma triacylglycerols in postmenopausal women." The American journal of clinical nutrition 73.3 (2001): 560-566

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