

GLYCEMIC INDEX & WEIGHT MANAGEMENT



making healthy choices easy

A newsletter from the Glycemic Index Foundation explaining the benefits of low GI and the GI Symbol Program September 2012

Increased consumption of carbohydrate foods and drinks with a high GI is widely believed to be contributing to the global obesity pandemic.

High GI foods are believed to alter appetite and energy partitioning in a way that is conducive to body fat gain¹. Numerous intervention studies reveal the favourable impact of low GI diets on weight management² and epidemiological studies suggest that those people naturally eating low GI diets are at lower risk of being overweight and gaining weight in the future^{3,4,5,6}.

So what is it about low GI foods that make them so beneficial for weight management?

How do low GI carbs work?

Several features of low GI foods help facilitate weight loss.

Low GI diets reduce insulin levels

The effect of low GI foods on blood insulin levels is likely to be an important reason for their effectiveness in weight management. While insulin is the primary regulator of glucose metabolism it also plays a key role in fat metabolism. High insulin levels following high GI foods promote carbohydrate oxidation and fat storage. Persistently high insulin levels, as occur in people with insulin resistance, result in decreased expression of the rate limiting enzymes

involved in fat oxidation and thereby alter the potential for fat burning.⁷ This is why people with insulin resistance often struggle to lose weight and accumulate fat - around the waist, in the liver (fatty liver), in the blood (high triglycerides) and inside muscle cells.

Low GI foods and meals promote higher rates of fat oxidation

In contrast, low GI foods tip the balance in favour of fat oxidation. Stevenson et al.⁸, demonstrated significantly greater fat oxidation following low, versus high-GI meals. This is the case at rest and during exercise⁹. Compared with a high GI/low-protein standard breakfast, a low GI/high soy protein meal replacement produced greater fat oxidation in the postprandial period, coinciding with favourable changes to appetite regulating hormones¹⁰.

Low GI diets facilitate greater fat loss

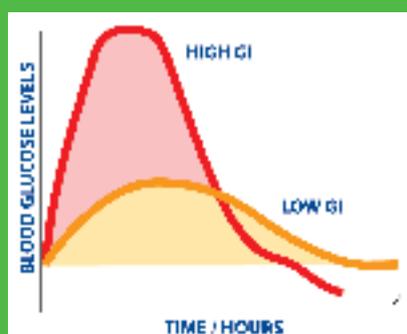
Several intervention studies indicate that low GI diets yield greater reductions in body weight, total fat mass and body mass index than high GI or conventional energy-restricted diets². In one Harvard study of overweight adults following either a conventional high fibre, low fat diet or an isoenergetic low GI diet lost similar amounts of weight over 18 months, but those subjects who had high insulin levels lost nearly 6kg on the low GI diet compared to only 1kg lost by those on the conventional low fat diet¹¹.



Moreover they lost 3 times more body fat and had greater improvements in cardiovascular disease (CVD) risk factors.

McMillan-Price¹² found that weight and body fat loss were over 50% greater in obese adults following a low GI, high protein diet compared to a conventional low fat approach. In animal studies where the diet can be tightly controlled, rats fed a high GI diet were found to have approx 40% more body fat and almost 10% less lean mass than those fed a low GI diet, after only 9 weeks of an 18 week intervention¹³. More recently Rizkalla et al¹⁴, found greater shrinkage of adipocytes in weight loss brought about by a high protein, low GI diet compared to a conventional low fat diet, as well as improvements in CVD risk factors.

GLYCEMIC INDEX



The **Glycemic Index (GI)** is a relative ranking of carbohydrate in foods according to how they affect blood glucose levels. Foods with a low GI ($GI \leq 55$) release glucose into the bloodstream at a slow sustainable rate, and have proven benefits for health.

A low GI diet is not a fad diet but a way of eating that is sustainable in the long term and is backed by over 30 years of scientific evidence. This includes facilitating the management of diabetes, weight loss and weight loss maintenance and reducing the risk of developing type 2 diabetes, diabetes complications and other chronic lifestyle diseases.

To make healthy choices easier we developed the **GI Symbol Program**, a not-for-profit health initiative backed by the University of Sydney and Juvenile Diabetes Research Foundation. The GI Symbol is a powerful tool for quickly and reliably making healthy food choices when grocery shopping. It's your guarantee that the GI value stated near the nutrition information label is accurate and that the food meets strict nutritional criteria.

The free monthly GI Newsletter informs you of the most recent findings from around the world (Register at <http://ginews.blogspot.com>)

Low GI foods and meals promote satiety and delay hunger

The satiating effect of low GI foods is partly related to their slower rate of digestion and absorption. They stay in the gut longer and reach lower parts of the small intestine, triggering receptors that increase the secretion of satiety hormones such as GLP-1 and CCK15. Both of these hormones produce feelings of satiation and GLP-1 has the added bonus of increasing insulin sensitivity.

Low GI meals, compared to their high GI equivalents, can also result in less energy intake at subsequent meals¹⁵. This is thought to occur through the influence of GI on the availability of fuel sources in the postprandial period. High GI foods with their associated high levels of insulin and low levels of glucagon, stimulate the uptake of glucose and fatty acids and suppress lipolysis. The consequent drop in circulating metabolic fuels can lead

to a rise in counter-regulatory hormones that stimulate appetite and promote eating¹⁶.

A low GI diet helps maintain weight loss

A great advantage of low GI diets is the value-added benefits they offer for long-term weight management and life-long health. Low GI diets bring about less of a fall in resting energy expenditure (REE) during weight loss¹⁷ and along with the macronutrient composition of the diet are a key factor in weight loss maintenance¹⁸. The Diabetes, Obesity and Genes study (DiOGenes)¹⁹ was designed to examine the effect of diets varying in protein and glycemic index on a number of health parameters during a period of weight maintenance. After an initial weight loss of $\geq 8\%$, participants were randomised to one of five *ad libitum* diets with either high or low glycemic index and protein content or a regular healthy diet as a control.

During the 26 week weight maintenance period the low GI, higher protein diet was the most effective in maintaining weight loss. It also brought about favourable reductions in CVD risk factors²⁰. What's more, it's turning out to be the arm with the lowest drop out rate, suggesting that this type of diet might be the one that you can stick to in the long run as well.

Summary

A healthy Low GI diet facilitates weight management* by:

- Reducing insulin levels
- Promoting higher rates of fat oxidation
- Facilitating greater fat loss
- Promoting satiety and delaying hunger
- Helping to maintain weight loss



How do you achieve a low GI diet?

Lowering the GI of the diet is simply a matter of swapping low GI carbs for those that are high GI. The greatest impact is achieved by focusing on the starchy carbohydrate staples.

	Minimise high GI options	Maximise low GI alternatives
Breads	Soft white breads	Genuine sourdough
	Light & airy wholemeal & white breads	Dense, wholegrain and seeded breads e.g. Bürgen®, pumpernickel
Cereals	Most refined, commercial, processed cereals	Traditional grains like minimally rolled oats, pearl barley, quinoa and cereals made from them like natural muesli e.g. Morning Sun® or Kellogg's® Sustain® & Guardian®
Main meal carbs	Potatoes: mashed, chips and french fries	Carisma™, Nicola and baby new potatoes, parsnip, corn, lentils, chickpeas, kidney, cannellini, baked beans & more
	Jasmine, Calrose, Pelde, Arborio, glutinous, short grain, brown or white rice	Basmati rice, Doongara CleverRice®, prepared sushi
	Polenta, millet, rice and corn pasta,	Pasta 'al dente', soba noodles, beanthread, Blu™ Gourmet Pearl couscous, buckwheat
Snacks	Water crackers, crispbread, doughnuts, confectionary, processed fruit bars, pretzels, rice crackers	Dried fruit and nuts, reduced and low fat yoghurt, some muesli bars e.g. Uncle Toby's® muesli bars, nut, seed and grain bars, fresh fruit such as apples, pears, grapes, banana; dried fruit bread, wholegrain crackers
Sweeteners	Sugar, golden syrup, treacle	Agave nectar, pure maple syrup, LoGICane™, pure floral honey, Fruisana™
Beverages	Cordials, soft drinks	Wild About Fruit™ juices and water, reduced or low fat milk or soy drink

For recipes, meal plans & a daily Low GI food guide for weight loss go to www.gifoundation.org.au

*For references cited go to www.gisymbol.com/resources.

For more information on low GI diets and weight management visit www.gisymbol.com

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