

GI News—May 2010



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‘The heart is the body’s engine room, nourishing every organ, muscle, nerve and bone with oxygen and nutrient-rich blood,’ says dietitian Nicole Senior in *Eat to Beat Cholesterol*. ‘So look after your heart and you can spend more time doing the things you enjoy, be able to participate in life with no restrictions, be around to enjoy your children and grand children, and live to see more great places and people.’ As May is Heart Week in Australia (2–8 May) and National Stroke Awareness Month in the US, we are focusing on diet and cardiovascular disease this issue and look at research that shows why being choosy about your carbs can help prevent heart disease and stroke.

Good eating, good health and good reading.

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Food for Thought

Reduce your risk of a heart disease with a low GI diet

The statistics for heart disease are pretty much the same everywhere in the developed world. It’s the biggest killer. Often the cause is atherosclerosis or ‘hardening of the arteries’ which develops slowly and quietly for years until bingo, it suddenly produces the stabbing pain of angina or a heart attack. Today, it’s affecting younger and younger people and the beginnings of blood vessel damage are even being seen in children.

Most people are aware of the key diet and lifestyle messages to reduce the likelihood of becoming a heart disease statistic: stopping smoking, getting more exercise and eating a healthy diet – especially cutting back on saturated fats, avoiding trans fats, and choosing the good fats. Fewer appreciate that high blood glucose levels are a red flag risk factor for heart disease, too. Here's why. A high level of glucose in the blood means:

- Excess glucose moves into cells lining the arteries, causing inflammation, thickening and stiffening – the making of 'hardened arteries'
- Highly reactive, charged particles called 'free radicals' are formed which destroy the machinery inside the cell, eventually causing the cell death
- Glucose adheres to cholesterol in the blood which promotes the formation of fatty plaque and prevents the body from breaking down excess cholesterol
- Higher levels of insulin raise blood pressure and blood fats, while suppressing 'good' (HDL) cholesterol levels

The results of a Harvard University study

(<http://www.ncbi.nlm.nih.gov/pubmed/10837285>) of over 100 000 people over 10 years (Nurses' Health Study) found that those who ate more high GI foods had nearly twice the risk of heart attack compared with those eating low GI diets. The increased risk associated with high GI diets was largely seen in those with a BMI over 23 – which takes in the great majority of adults (remember, a BMI of 20 to 25 is considered normal weight). This suggests that the insulin resistance that comes with increasing weight is an integral part of the problem. By lowering your blood glucose after meals and reducing high insulin levels, you'll have:

- More potential for weight loss and for maintaining weight loss and therefore less pressure on the heart
- Healthier blood vessels that are more elastic, making dilation easier, improving blood flow and reducing inflammation
- Better blood fats – more of the good HDL cholesterol and less of the bad LDL.

News Briefs

High GI carbs increase women's heart risk

'A high consumption of carbohydrates from high GI foods, rather than the overall quantity of carbohydrates consumed, appears to influence the risk of developing coronary heart disease in women' according to a large prospective study (the

EPICOR study) published in Archives of Internal Medicine (<http://archinte.ama-assn.org/cgi/content/abstract/170/7/640>).

Dr Sabina Sieri Fondazione IRCCS Istituto Nazionale dei Tumori, Milan, Italy, and colleagues analysed data on 44,132 adult volunteers (30,495 women and 13,637 men, aged 35 to 74 years old) who did not have cardiovascular disease at the start the study. They looked at the diet of the volunteers and followed them up for an average of nearly 8 years to see who developed coronary heart disease. They then compared the risk of developing heart disease among those with low GI and low GL diets with those with high GI and high GL diets.

In women (but not men), high carbohydrate intake and higher GL were associated with more than double the risk of developing heart disease during the 8 years. GI alone was not directly linked to heart disease but the researchers discovered something unique: increasing amounts of carbohydrate from high GI foods were associated with higher risk, while increasing amounts of low GI carbohydrate were not. (So you can eat your healthy low GI carbs with a guilt-free conscience). In men, there was no link between overall carbohydrate intake, GI or GL and heart disease risk. This could be because the adverse changes associated with carbohydrate intake, including triglyceride levels, are stronger risk factors for heart disease in women than in men, the authors note.

‘We tentatively suggest that the adverse effects of a high glycemic diet in women are mediated by sex-related differences in lipoprotein and glucose metabolism, but further prospective studies are required to verify a lack of association of a high dietary glycemic load with cardiovascular disease in men,’ they conclude.

Fruit and veg and the other big C

The study that really hit the headlines in April was published in the Journal of the National Cancer Institute (<http://jnci.oxfordjournals.org/cgi/content/abstract/djq072>) and reported only a borderline reduction in risk of cancer with increased consumption of total fruit and vegetables. The European Prospective Investigation into Cancer and Nutrition showed that for every 200 grams (about two servings) of total fruits and vegetables eaten per day, the incidence of cancer was reduced by 4 per cent.

Apart from the usual problem of accurate (or inaccurate!) self reporting in studies like this, NHS Choices Behind the Headlines

(<http://www.nhs.uk/news/2010/04April/Pages/Five-a-day-fruit-veg-cancer-risk.aspx>) points out that ‘... this study did not assess the number of pieces or portions of fruit and vegetables eaten, only the total mass. On the basis of the study report, this could arguably have been made up of only a single fruit or vegetable.’

Harvard’s Prof. Walter Willett in an accompanying editorial (<http://jnci.oxfordjournals.org/cgi/content/full/djq098>) reminds us that there’s still a pretty strong reason to get your five a day. It’s called cardiovascular disease (the biggest killer of men and women on most Western countries). He writes: ‘... in the same population of men and women that showed no association between fruits and vegetables and total cancer, incidence of coronary heart disease or stroke was 30% lower. Data from a large randomized trial showing that increasing intake of fruits and vegetables reduces blood pressure, a major determinant of cardiovascular disease, make the case for causality compelling, although benefits through additional pathways are also possible. Thus, recommendations and actions to increase intake of fruits and vegetables have a sound basis.’

The GI of your diet is a predictor of type 2 diabetes and cardiovascular disease risk

A systematic review and meta-analysis of 37 prospective cohort studies on the association of dietary GI and the risk of developing common lifestyle-related diseases published in the American Journal of Clinical Nutrition

(<http://www.ncbi.nlm.nih.gov/pubmed/18326601>) showed that diets with a high GI or a high GL increase your risk of type 2 diabetes and cardiovascular disease. It also showed some evidence for links between the GI and gallstones and some types of cancer. ‘The key message,’ says lead author Dr Alan Barclay, ‘is that the GI of your diet is a predictor of your disease risk.’

Can you put a number on a low GI diet?

‘A GI of 45 or less is a reasonable definition of a low GI diet or meal,’ says dietitian and researcher Dr Alan Barclay. ‘This is because what we now know from numerous observational cohort studies around the world is that the daily average GI of the diet of people in the lowest quintile (20% of the population) is about 40–50. Similarly, in a meta-analysis published in Diabetes Care

(<http://www.ncbi.nlm.nih.gov/pubmed/12882846>) of 15 experimental studies investigating the role of low GI diets in managing diabetes, the daily average GI was 45. Since this average GI has been proven to have significant health benefits in people with existing diabetes and in reducing the risk of chronic diseases like heart

disease and diabetes, and importantly, people can and do achieve it in real life, we believe a GI of 45 or less is what we all need to be aiming for.’

Why it pays to be prudent and go low GI

Although further research into the role of GI in the prevention and management of obesity and chronic disease is needed, a large body of evidence provides robust support for the current popularity of low GI carbohydrate diets in the prevention of obesity, diabetes, and cardiovascular disease. Prof Jennie Brand-Miller and colleagues argue the case for low GI diets as a dietary strategy that is superior to that of lowering carbohydrate intake or increasing dietary protein in a review of the evidence published in the *Journal of the American College of Nutrition* (http://www.jacn.org/cgi/content/abstract/28/4_Supplement_1/446S).

‘Similar to other dietary factors (such as calories or kilojoules), the GI should not be the sole focus upon which food choices are made,’ they conclude. ‘Rather, the GI should be applied judiciously to select foods within the context of a prudent diet. However, it is not correct to assume that wholemeal (wholewheat), wholegrain, and high fiber foods are low GI. Indeed, a vast majority of “wholegrain” breads, breakfast cereals, and processed cereal products have a GI over 70. Moreover, the GI cannot be guessed by examination of the nutritional composition or physical attributes of a food. The need for GI testing of local foods is critical to the practical application of low GI diets.’

‘A low GI diet is a popular choice,’ says Jennie Brand-Miller speaking to *GI News*, ‘because it’s actually a very simple swap this for that message. You simply swap this high GI source of carbohydrate foods for that low GI one within the context of an overall healthy or what we like to call “prudent” diet. People find that they can stick to this way of eating because they aren’t being asked to restrict whole food groups. Our advice has always been to continue to eat what you like eating, but to fine-tune your choices by, say, replacing jasmine rice with basmati or one of the lower GI rices that have been tested.’

GI Group: Want to see how easy it is to switch to a prudent low GI diet? Download a copy of the GI Symbol Program's free booklet, *Making Healthy Choices Easier* (<http://www.gisymbol.com.au/MakingHealthyChoicesEasier.pdf>).

Food of the Month

Grapefruit

The tang of **fresh grapefruit** (GI 25) will not only start your day with zest, just half a medium-sized one will deliver around 70% of your daily dose of vitamin C.

Canned grapefruit segments (GI 47) and **commercial grapefruit juice** (GI 48) are easy year-round options when fresh fruit isn't available, but as you can see they have higher GI values. In fact, fresh grapefruit has the lowest GI value of all fruit tested so far. It's not just the acid that has a blood glucose-lowering effect, it's also the pectin (a type of soluble fibre).

Grapefruit can play a smart part in helping you to reach your weight-loss goals as part of an overall healthy balanced diet being a nutrient-rich food that's low in calories and high in volume (they are very juicy). A 2006 study in the Journal of Medicinal Food (<http://www.ncbi.nlm.nih.gov/pubmed/16579728>) found that 'half of a fresh grapefruit eaten before meals was associated with significant weight loss (an average of 1.6kg [3½lb] over twelve weeks).' Insulin resistance also improved.

Writing in the Journal of Agricultural and Food Chemistry

(<http://pubs.acs.org/doi/abs/10.1021/jf058171g>) Israeli researchers report that a heart-healthy diet supplemented with fresh red grapefruit was effective in lowering triglycerides, a blood fat that's a risk factor for heart disease. They divided 57 post-operative bypass patients with atherosclerosis (not taking statins) into three groups who were served a standard diet for 30 days with either a single serving of fresh red grapefruit, or a single serving of fresh white grapefruit, or no grapefruit (the control group). The men and women who consumed fresh red or white grapefruit had significant decreases in total and LDL cholesterol levels compared with the control group.

- Toss segments in salads with chickpeas; or fennel and rocket/arugula; smoked salmon and avocado; prawn and avocado; or witlof, radicchio, beets and avocado; or simply add to Asian greens with a citrus dressing.
- Whip up a winter fruit salad with grapefruit and orange segments, a sprinkle of raisins and a drizzle of honey.
- Spritz tangy grapefruit juice and soda for a fresh and fruit drink with fewer calories.

Grapefruit and medication: Grapefruit and grapefruit juice can interact with a number of medications, either making them work too strongly or causing unpleasant side effects. Mayo Clinic (<http://www.mayoclinic.com/health/food-and-nutrition/AN00413>) nutritionist Katherine Zeratsky, R.D. says: 'If you're concerned about the effect grapefruit juice may have on your medications, talk to your doctor or pharmacist.'

In the GI News Kitchen

American dietitian and author of *Good Carbs, Bad Carbs*, **Johanna Burani**, shares favourite recipes with a low or moderate GI from her Italian kitchen. For more information, check out Johanna's website (<http://www.eatgoodcarbs.com/>). The photographs are by Sergio Burani. His food, travel and wine photography website is www.photosbysergio.com.

Bowties 'n' Beans

This dish is as nutritious as it is fast, economical and really delicious. The Italians seem to be able to prepare effortlessly wholesome dishes with what's in the fridge or in the vegetable garden or at the local market.

Makes 5 one-cup serves

1 tbsp extra virgin olive oil

2 cloves garlic, minced

175g/6oz fresh spinach, washed and well drained, each leaf and stem quartered

6 oil-packed sundried tomatoes, coarsely chopped

400g (14oz) can cannellini beans, drained and rinsed (1½ cups)

pinch dried thyme

Salt and pepper to taste

½ cup hot water

2 cups uncooked farfalle (bowtie or butterfly) pasta

1 tbsp oil from sundried tomatoes jar

2 tbsp grated pecorino romano cheese

- Warm the olive oil in a large heavy pan. Add the garlic and the spinach and sauté on medium-high heat for 4–5 minutes or until the spinach leaves look wilted. Add the tomatoes, beans, thyme, salt and pepper and hot water. Lower the heat and simmer for 5 minutes.
- In the meantime, cook the pasta according to package directions until al dente.

- Drain the pasta and add to the sauce in the pan. Drizzle the oil from the sun-dried tomatoes jar over the pasta and mix well, using tongs. Serve immediately with the grated cheese on the side.

Per 1-cup serving

Energy: 962 kJ/ 229 cal; Protein 10 g; Fat 8 g (includes 1 g saturated fat and 3 mg cholesterol); Carbs 31 g; Fibre 5 g

Cut back on the food bills and enjoy easily prepared, seasonal, satisfying and delicious low or moderate GI meals that don't compromise on quality and flavour one little bit with *Money Saving Meals* author **Diane Temple**. For more recipes check out Diane's Money Saving Meals website (<http://www.moneysavingmeals.com.au/>).

Chicken and barley risotto

Barley is a healthy low GI grain that's perfect for cheap eats at home. It's also one of those magic foods we should be eating more of (nutritious and high in soluble fibre). It takes about 35 minutes to cook and you can use it in place of rice as a side dish (cooked in stock for extra flavour), or added to soups, stews and pilafs or to make a 'cheat's risotto' like this one. Serves 4 to 6

450g (1lb) skinless chicken thigh fillets, cut into bite-sized pieces

2 tbsp white wine vinegar

2 tsp dried oregano

2 tbsp olive oil

1 large onion, chopped

4 cloves garlic, peeled and crushed

1½ cups pearl barley

5½ cups hot chicken stock

120g (4oz) green beans, trimmed, sliced into 3 pieces

1 cup frozen peas

¼ cup chopped parsley

1/3 cup finely grated Parmesan cheese

- Pop the chicken in a small bowl with the vinegar and oregano, toss to coat and set aside for 5–10 minutes. Use the marinating time to chop the onion and trim the beans.
- Cook the chicken in 1 tablespoon of the oil in a large pan for 3–4 minutes over medium heat, turning to brown on all sides. Lift out and set aside, covered, to

keep warm. Heat the remaining oil and sauté the onion and garlic on a low heat for about 5 minutes until the onion is soft. Stir through the barley making sure it is well coated then tip in the hot stock, and bring to the boil. Reduce the heat and let the risotto simmer, uncovered, for 30 minutes, stirring occasionally.

- Stir in the chicken and continue simmering for a further 10 minutes. Add the beans and cook for 3 minutes, then stir through the peas, parsley and Parmesan cheese, and cook until the peas have heated through (about 1–2 minutes). Taste, season with freshly ground black pepper and serve as is or with a tossed salad.

Per serving (based on 4 servings)

Energy: 2386 kJ/ 570 cal; Protein 39g; Fat 19g (includes 4g saturated fat and 96mg cholesterol); Carbs 53g; Fibre 13g

Barbecued chermoula lamb with pumpkin and eggplant burghul

GI News myth-buster, Nicole Senior, has published two cookbooks (*Eat to Beat Cholesterol* and *Heart Food*) both with home economist Veronica Cuskelly to show how deliciously easy it is to tuck into heart-friendly foods like vegetables, low GI wholegrains, fruits, nuts, fish and lean meats and healthy oils. This low GI recipe for two is from *Eat to Beat Cholesterol*. When we made it we found it could also serve three people for a lighter meal easily.

Serves 2-3

200g (7oz) piece lamb (loin eye)
3 tsp chermoula (or a Moroccan) spice mix
½ cup burghul (bulgur)
1 cup boiling water
2 cups diced (1cm/½in) butternut pumpkin
½ cup sliced beans
1 tbsp olive oil
1 cup sliced onion
2¼ cups sliced baby eggplant (aubergine)
Olive oil cooking spray
½ cup reduced fat plain yoghurt, lightly beaten
2 tbsp chopped coriander (cilantro) leaves

- Sprinkle 2 tsp of the chermoula spice all over the lamb and press into the flesh; cover and refrigerate for 20 minutes.

- Meanwhile, place the burghul, boiling water and remaining teaspoon of chermoula in a bowl and allow to stand for 15–20 minutes until the grains have softened.
- Place the pumpkin in a small saucepan, just cover with water and cook, covered, until tender, 4–5 minutes, add the beans and cook for a further 1–2 minutes. Drain, reserving ¼ cup of the cooking liquid.
- Heat oil in a non-stick pan over a medium heat and cook the onion for 1–2 minutes. Add the eggplant and cook, stirring occasionally, for 5 minutes or until cooked. Stir in the pumpkin, beans, the reserved cooking liquid and burghul and cook, stirring, for a further 1–2 minutes. Keep warm.
- Spray a barbecue with olive oil spray and cook the lamb as liked, turning once. Wrap in foil to rest in a warm place for 5 minutes then slice finely across the grain.
- To serve, spoon half the burghul mix on each plate and top with lamb slices and a dollop of yoghurt sprinkled with coriander.

Per serving (based on 3 serves)

Energy: 1718kJ/ 410cal; Protein 26g; Fat 13g (includes 3g saturated fat and 47mg cholesterol); Carbs 47g; Fibre 10g

Check out Nicole's website (<http://www.nicolesenior.com.au/>) for more information on *Eat to Beat Cholesterol* and *Heart Food* – they are packed with heart-friendly recipes the whole family will love.

Busting Food Myths with Nicole Senior

Myth: We need to eat salt

Fact: We add salt to foods because we like, not because we need it

I heard a food critic talking about salt (the main source of sodium in our diet) on the radio recently. He very much supported chefs adding salt to cooking because he said food had no flavour without it. He also said adding salt was good for us because the body needs it. He was half right on the first point but dead wrong on the second.

Our physiological need for sodium is actually very low. The average Adequate Intake for an adult is between 460–920mg sodium per day (equivalent to 1–2g salt). This is easily provided by the natural sodium content in whole foods such as meat, dairy, vegetables, fruits, grains, seeds and nuts. For example, a chicken drumstick, a cup of milk, a cup of mixed vegetables, a small banana, a cup of cooked rice, or 1/3 cup of

mixed nuts all contain 100mg each.

Eating too much salt raises blood pressure and this is a risk factor for heart disease. It's particularly bad news for people with diabetes because it also increases the risk of other complications as well, such as stroke, kidney damage and eye disease. Here in Australia for example, AWASH (Australians for World Action on Salt and Health) says we eat on average 9g of salt a day when the Suggested Dietary Target is 4g. Reducing our salt intake by 25–35% could lead to a 20% or greater reduction in risk of heart attacks and stroke.

So how did we get to a situation where eating too much salt became common place, and a pizza contains twice your daily recommended amount? Let's start with the tongue. Human taste buds have receptors for sweet, sour, salty, bitter and umami (a savoury flavour) and possibly fat according to a recent study. The salt taste helped early man find mineral rich foods for survival in the same way sweetness helped to find foods high in sugars for energy. Of course the taste for salt was very sensitive to the low concentrations in wild, unprocessed foods. As we switched from hunter-gatherers to agricultural communities, we needed a way to preserve foods and salt was an excellent way to ensure food was available all year round. It was then our taste for salt began.

Then the industrial and technological revolutions radically changed the way we buy, store, cook and buy food. Nowadays we have sophisticated packaging, refrigeration, canning and freezing. From a preservation point of view, salt is redundant. While salt still fulfils some technical functions in food processing, by far the over-riding reason it is in our foods in large amounts is because we like the taste. We have grown accustomed to over-salted foods so much that we crave it and miss it when it's gone. This of course creates a dilemma for restaurants and food manufacturers who want to use less salt – people complain there is less flavour.

So how do we cut back on salt as a community? There needs to be both a push from consumers for less salty foods and a pull from the food industry to use less. One won't work without the other. We all have to wean ourselves off our lust for salt by cutting down gradually to give our abused taste buds a chance to recover and rediscover the taste of real and natural flavours again. Checking food labels to find lower sodium options will help, but so will switching to more fresh unprocessed foods and holding back on salt in cooking. It's simple really, eat less salt and live a longer and healthier life.

For more straight talking nutrition advice and lower-salt recipes to look after your heart, go to www.eattobeatcholesterol.com.au.

GI Symbol News with Dr Alan Barclay

Getting to the heart of the wholegrain matter

Eating more wholegrain foods is associated with a lower risk of developing cardiovascular disease (heart disease and stroke) based on the evidence from a number of large observational studies published in recent years. For example, the Nurses' Health Study (<http://www.ajcn.org/cgi/reprint/70/3/412>) reported that women who ate the most (an average of 2.5 servings a day) intact grain foods – generally wholegrain breakfast cereals, brown rice and whole grain bread – were 30% less likely to develop heart disease than women eating merely a single serving of these foods a week. Since then, 'consume more wholegrains' has become something of a mantra by dietitians, nutritionists and medical doctors, and is enshrined in dietary guidelines around the globe. But do all wholegrains reduce the risk of cardiovascular disease?

For oats and barley, there's both observational and intervention (clinical trial) data suggesting that bran and some soluble fibre components in these grains improve blood cholesterol and other markers of cardiovascular disease risk. The picture is not so clear, however, when it comes to mixed sources of wholegrain foods, with conflicting results from the small number of clinical trials that have been published to-date.

In the most recently published clinical trial, researchers from the University of Newcastle upon Tyne (<http://www.wholeheart.org.uk/>) have found that when they provided overweight but otherwise healthy men and women with a range of wholegrain foods and asked them to substitute them 'like for like' for refined grain foods in their typical diet over a 16 week period, there were no significant differences in any markers of cardiovascular disease risk (cholesterol, triglycerides, insulin sensitivity and a range of common inflammatory markers) between those who substituted wholegrain foods into their diet, and those who didn't (the control group).

Writing in the British Journal of Nutrition

(<http://www.ncbi.nlm.nih.gov/pubmed/20307353>) the authors conclude: "... the

duration of this controlled intervention study represents a very short period of dietary change in the context of lifelong dietary exposures, and may be insufficient to change the lifetime disease trajectory for these individuals with a strong pre-existing risk factor The present study sounds a note of caution to the specific health claims for whole grain-rich foods and cardiovascular health. However, it does not undermine more general efforts to promote whole grains as part of a healthy diet for the general population across the life course, based on data from observational studies.”

We don't know the full details about what the participants in this study ate, but using the data for the cereal grain foods they were provided with (listed in Table 1), we cheekily estimated the (weighted) average GI of the wholegrains consumed in the diets – the men's would have been around 61 and the women's around 62. In fact, only one of the wholegrain foods given to the study participants – whole wheat pasta – was likely to have a low GI (≤ 55). As we said earlier in this issue (Can You Put a Number on a Low GI Diet?), it's an average GI of 45 that has been proven to have significant health benefits in people with existing diabetes and in reducing the risk of chronic diseases like heart disease and diabetes. At this stage, it appears unlikely that high GI wholegrains will have the same benefits.

Of course, that does not mean you should give up on wholegrains, they offer a range of other health benefits. Just say no thanks to finely milled grain foods even when they claim to be 'wholegrain' and head for the low GI, whole kernel grains, like those found in Burgen or Tip Top 9 grain bread, whole wheat pasta, and traditional muesli's like Morning Sun. If in doubt, look for the GI Symbol.

In this month's GI Update, Jennie Brand-Miller explains why some wholegrains have a low GI and others don't.



For more information about the GI Symbol Program

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GI Update

GI Q&A with Prof Jennie Brand-Miller

Can you explain why some ‘wholegrains’ have a low GI and others don’t?

Not all ‘wholegrain’ foods are created equal, in fact they can behave quite differently in our bodies depending on the following five key factors that can slow digestion, making them even better-for-you low GI choices.

Starch matters There are two types of starch found in foods – amylose and amylopectin – and the ratio of them in foods can vary considerably. The more amylose a food contains, the less easily the starch is gelatinised and the slower its rate of digestion. This is because amylose is a straight chain molecule, like a string of beads. These tend to line up in rows and form compact clumps. Legumes have lots of amylose as does basmati rice. Amylopectin on the other hand is a string of glucose molecules with lots of branching points, such as you see in some sorts of seaweed. Amylopectin molecules are larger and more open and the starch is easier to gelatinise and digest as in jasmine rice.

Size matters The larger the particle size, the lower the GI. It’s the grinding or milling of cereals that reduces the particle size that makes it easier for water to be absorbed and enzymes to attack during digestion. That is why cereal foods made from fine flours like many breakfast cereals tend to have a high GI value.

Fibre matters Soluble fibres – the gel, gum and often jelly-like components of foods like oats, legumes and apples – can lower your body’s glycemic response to a food because they slow down the time it takes for food to pass through the stomach and small intestine.

Insoluble fibres are dry and bran-like and often referred to as roughage. Insoluble fibres will only lower the GI of a food when they exist in their intact, original form,

for example in whole grains of wheat (the kernel). Here they act as a physical barrier, delaying access of digestive enzymes and water to the starch within the cereal grain.

Physical entrapment The fibrous coat around foods like beans, chickpeas, lentils, barley and seeds acts as a physical barrier. It slows down access of the digestive enzymes to the starch inside and thus slowing digestion.

Starch gelatinization The starch in raw food is stored in hard, compact granules that make it difficult to digest. During cooking, water and heat expand these starch granules to different degrees – some actually burst freeing the individual starch molecules inside. If most of the starch granules have swollen and burst during cooking, we say that the starch is fully gelatinised. These swollen granules and free starch molecules are very easy to digest.

New GI values with Fiona Atkinson

Hurrah! A GI value for traditional Chinese pork buns!

The April edition of World Journal of Gastroenterology

(<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2846258/pdf/WJG-16-1512.pdf>)

includes the GI values of 23 popular Chinese traditional foods tested by Prof Wong Heung-sang Stephen and his colleagues in the Chinese University of Hong Kong. The results of this study are also preliminary references on the setup of a GI database for Chinese traditional foods. You can find the GI and GL values of these foods on the database at www.glycemicindex.com

- **Low GI:** tuna fish bun, egg tart, green bean dessert, Chinese herbal jelly, fried rice vermicelli in Singapore-style, and spring roll
- **Moderate GI:** baked barbecued pork puff, fried fritter, “mai-lai” cake, “pineapple” bun, fried rice noodles with sliced beef, barbecue pork bun, moon cakes, glutinous rice ball, instant sweet milky bun, and salted meat rice dumpling
- **High GI:** fried rice in Yangzhou- style, sticky rice wrapped in lotus leaf, steamed glutinous rice roll, jam and peanut butter toast, plain steamed vermicelli roll, red bean dessert, and frozen sweet milky bun

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