

GI News—November 2010



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The recent publication of the International Standard for GI testing is very good news for consumers. It will play an important role in ensuring nutrition and health claims about GI made on food labels and in advertisements can be trusted, and will assist food producers and manufacturers worldwide in formulating low GI products. A food's GI value cannot be predicted from its appearance, composition, carbohydrate content, or even the GI of related foods. The only way to know a food's GI value is to test it in real people (not a glass dish) following a strict protocol which Dr Alan Barclay describes in GI Symbol News. If you want to know the GI value of a food you like to eat and can't find it on the GI database (www.glycemicindex.com), contact the manufacturer and suggest they have it tested.

Good eating, good health and good reading.

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Food for Thought

Science and the low GI concept

The number of papers with 'GI' in their title published in peer-reviewed scientific journals has increased exponentially over the last 10 years. In an interview with *FoodIngredientsfirst* (www.foodingredientsfirst.com/magazine-digits/View-from-the-Top-Jennie-Brand-Miller.html) Jennie talked about how science is developing around the GI concept. We reprint an extract here.

'Science has always underpinned the low GI concept,' said Prof Jennie Brand-Miller. 'Indeed, it is what separates the GI concept from a 'fad'. Research is showing that

high GI foods and diets with a high glycemic load are much more likely to be linked to development of diseases like type 2 diabetes and cardiovascular disease than the amount of carbohydrate, starch or sugar content of the diet. There is also more focus on weight control, particularly the ability to prevent weight re-gain after weight loss – the holy grail.

And while the science of GI can be complex, the consumer application isn't. It's really simple – you swap a high GI food for a low GI food from within food categories – a low GI bread instead of a high GI one, a low GI breakfast cereal for a high GI one. The consumer learnt that there are good fats and bad fats and to swap one for the other. The same applies to carbohydrate.'

What are the new emerging GI areas? 'It amazes me that the GI is being linked to so many things, including inflammatory diseases (e.g. arthritis), birth defects, Alzheimer's disease, memory and different types of cancer. There's even research that suggests that food 'addiction' is related to high blood glucose spikes. I'm currently involved in research applying low GI diets to pregnancy. We want to reduce the risk that the baby will have excess fat on its body at birth. The child obesity epidemic can be traced back to increasing birth weights over the past 25 years.'

Which countries and food markets hold the most potential for low GI? 'I think the GI is relevant to every nation on the planet. All of us are more or less susceptible to obesity, type 2 diabetes and heart disease. Our health care budgets can't sustain the current rate of expenditure. Prevention is the only way forward – diet and exercise are the two biggest parts of the solution.'

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News Briefs

New light on dietary recommendations for good heart health

A new study (known as the RISCK trial) published in the *American Journal of Clinical Nutrition* (www.ajcn.org/cgi/content/full/92/4/748) has shed light on practical and achievable dietary recommendations for reducing the risk of heart disease.

'The RISCK trial is important' says lead author Prof Susan Jebb, Head of Nutrition and Health Research at the MRC Human Nutrition Research Unit 'because in one study, it has tested the impact of changing the amount and type of fat and

carbohydrate in the diet of individual participants to test the effects on their health, using very detailed measurements. It suggests that you can achieve favourable blood lipid (fats) profiles, associated with reductions in cardiovascular disease risk, by reducing saturated fat and substituting this with monounsaturated fat and by substituting high GI carbohydrates with low GI carbohydrates.'

The trial included 548 overweight people at risk of cardiovascular disease. All followed the same 'reference' (weight maintenance) diet for a month and were then randomised to one of five diets for 6 months (24 weeks):

- One group continued with the reference diet.
- Two groups were provided with foods that, although relatively high in fat, had around a third of the saturated fat component replaced predominately with monounsaturated fat (carbohydrate was 45% of total energy intake for these groups).
- The remaining two groups reduced the saturated fat in their diet by replacing the energy with carbohydrate (55% total energy).

The study indeed confirmed the well established finding that reducing saturated fat intakes results in decreases in total and LDL (bad) cholesterol. However, interestingly, the researchers also found that simply following a lower GI diet led to significant further reductions in total and LDL cholesterol with the greatest improvement in blood lipids – including an increase in HDL (good) cholesterol – seen in the high monounsaturated fat/low GI group.

In the study, the researchers provided the participants with key foods and the target differences between the high GI and low GI groups was 11 and 13 GI points respectively. 'In the event,' says Prof Jebb 'the dietary records suggest we achieved a smaller difference than the target – about 8. We based the low GI dietary intervention entirely on swaps – one type of bread or breakfast cereal for another as we were very keen to keep the rest of the diet unchanged as far as possible. Where we did struggle was to find low GI snacks, which fitted with our broader dietary goals for fat type as well as GI. If more suitable products were available that would have helped to achieve a bigger reduction in GI. For example, we didn't want people to go from biscuits to fruit as this would have upset the calorie intake and fat/carbohydrate intake as well as GI.'

We asked Prof Jebb to comment on the suggestion made previously in *GI News* (Dr

Alan Barclay) (http://ginews.blogspot.com/2010_05_01_archive.html#GI45) that a GI of 45 or less is what we all need to be aiming for '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.'

'We were no where near 45 for the diet as a whole,' said Dr Jebb. 'However, it is important to remember in the RISCK study what we were looking at is what could be realistically achieved at a broad community level in the UK – not for individual clinical cases. Our focus is more on supporting people in the UK community at large to make healthy changes with very practical advice.'

You can read more about the RISCK study at www.mrc-hnr.cam.ac.uk/research/risck-study/index.html.

GI and heart disease

A study from Mexico in the *Journal of Nutrition and Metabolism* (www.hindawi.com/journals/jnume/2010/170680.html) reports that both the quality and the quantity of carbohydrate consumption significantly influence blood cholesterol and triglyceride (a type of blood fat) concentrations and heart disease risk in Mexican adults who don't have diabetes. The researchers analysed data from 5830 participants from the Health Worker Cohort Study and assessed dietary GI and GL using a validated food frequency questionnaire.

'Our data strongly support the hypothesis that diets with a low GI and GL – which include foods like whole grains (e.g., whole grain breads, barley and wheat germ), vegetables, legumes, fruits, and nuts – are associated with a more favorable lipid profile that may be cardioprotective,' they conclude.

New international yardstick for GI claims

Consumers around the world will benefit from the release of the new International Standard designed to measure the glycemic index (GI) of foods (ISO 26642:2010), which sets out the now internationally recognised scientific method to determine the GI of foods. It will play an important role in ensuring nutrition and health claims made on food labels can be trusted and will assist food producers formulate healthier low GI products.

Put simply, the GI ranks the glycemic potency of different carbohydrate-containing foods as they are eaten. Foods with a high GI cause a dramatic rise in blood glucose

levels while foods with a low GI value have much less of an impact. Studies from major medical research institutions and research universities have found that the GI is a clinically proven tool in its application to the dietary management of diabetes, coronary health and weight control.

Dr Alan Barclay, Chief Scientific Officer at the Glycemic Index Foundation commented that: 'Consumers looking for healthy foods need to be confident the claims made by food manufacturers on their labelling and in advertisements are accurate and reliable,' he said. 'Historically, not all GI claims have been reliable with some based on extrapolation or inappropriate methodology. A food's GI value cannot be predicted from its appearance, composition, carbohydrate content, or even the GI values of related foods. The only way to know a food's GI value is to test it, following the now international standardized methodology.'

French and English language versions of the ISO standard are available at www.iso.org/iso/iso_catalogue/catalogue_tc/catalogue_detail.htm?csnumber=43633.

Get the Scoop on Nutrition with Emma Stirling

The scoop on stevia

The 'pure, white and deadly' myths surrounding sugar have helped create a huge market for alternative sweeteners. Some, such as aspartame (Equal/Nutrasweet) and saccharin, have themselves been subject to a huge number of urban myths and internet scare-mongering about their supposed poor safety record. But these non-nutritive sweeteners are in fact among the world's most tested and evaluated food ingredients and there is an extremely lengthy government process in place for approval, monitoring, review and regulation before they are allowed to be included in the food supply.

This process includes scientific risk assessment reports, independent scientific review plus public consultation and can take several years. The latest tabletop sweetener and food ingredient to go through this process and be added to the alternative sweetener ranks is stevia, the common name for the extract stevioside made from the leaves of *Stevia rebaudiana*, a natural, sweet-tasting plant native to South America. It has recently been approved by the US Food and Drug Administration (USFDA) and Food Standards Australia New Zealand (FSANZ).

You can now find stevia in hundreds of food products including teas, soft drinks, juices, yogurt, soymilk, baked goods, cereals, salad dressings and confectionery. Interestingly stevia is not yet approved as a food ingredient by Canadian regulators. And before you jump to the conclusion that Canadians are more wary than the rest of us, it just means that they are on a different timeline and yet to assess an application for stevia. You can read more background on stevia in Canada at www.hc-sc.gc.ca/fn-an/securit/addit/sweeten-edulcor/stevia-faq-eng.php.

What I would like to suggest is that rather than focus on the safety of non-nutritive sweeteners like stevia, you really need to devote your energy to deciding if they will work for you. For your diabetes management? For your weight loss? For your style of cooking, eating and family meals? For your budget?

Stevia for example will have virtually no effect on your blood glucose levels and can help you cut back on your calories if you use it to replace equivalent amounts of sugar, honey, etc... And one recent study reported in *Appetite* (www.ncbi.nlm.nih.gov/pmc/articles/PMC2900484/?tool=pubmed) found that people do not compensate with extra calories or kilojoules after consuming food and drinks sweetened with stevia and participants reported similar levels of satiety (appetite satisfaction) to consuming a high calorie sucrose preload. You can read further studies on stevia at the Global Stevia Institute (www.globalstevia institute.com/en/default.aspx).

The major drawback of stevia and other non-nutritive sweeteners is that they aren't as versatile as sugar and honey and other nutritive sweeteners. This is because:

- They tend not to be heat stable.
- They don't brown or caramelize.
- They don't add texture or bulk to food when used in baking or making desserts.
- And they also tend to be much more expensive gram for gram.

So if you invest in stevia to sweeten your tea or coffee, you will still have to keep sugar (Logicane is a good option) in the pantry if you occasionally like to bake or make desserts.

Emma Stirling is an Accredited Practising Dietitian and health writer with over ten years experience writing for major publications. She is editor of The Scoop on Nutrition (www.scoopnutrition.com) – a blog by expert dietitians. Check it out for hot news bites.

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 www.eatgoodcarbs.com. The photographs are by Sergio Burani. His food, travel and wine photography website is photosbysergio.com.

Orecchiette and broccoli alla Franca

I've known Franca almost as long as I have known my husband (39 years). They were high school friends and anytime we visit my husband's hometown, Reggio Emilia (about 30 minutes west of Bologna), we always wind up at Franca's house for dinner. Her culinary prowess is as acclaimed as her affable personality, wit and contagious laugh. Recently I asked her for one of her recipes that I could share with GI News readers; she wrote this up for me in less than 5 minutes! Franca says: Instead of the garlic, one can substitute 2–3 anchovies in oil, smashing them with a fork and adding them to the cheese. Serves 4

500g (1¼ lb) head of fresh broccoli
240g (8oz) orecchiette
30g (1oz) freshly grated pecorino romano cheese
1–2 cloves garlic, minced
3 tbsp (45ml) extra virgin olive oil

Bring 5 litres (quarts) of water to a boil. In the meantime, wash the broccoli and divide it up into small florets, trim the stems and cut into small slices. When the water starts to boil, add the pasta and, after about 3–4 minutes, add the broccoli. Cook over moderate heat until the pasta is al dente, stirring frequently with a wooden spoon. When the pasta and broccoli are cooked, drain, keeping aside ½ cup of cooking water. While the pasta and broccoli are cooking...

Combine half the cheese, the garlic, 2–3 tablespoons of cooking water and 1 tablespoon of the oil in a small bowl; mix to form a dense paste.

Place the pasta and broccoli quickly in a preheated serving bowl, add the remaining olive oil (2 tablespoons) and the cheese paste plus a little reserved cooking water if the pasta is too dry. Serve immediately with the remaining cheese sprinkled on top.

Per serving

Energy: 1617kJ/385 cal; Protein 16g; Fat 14g (includes 3g saturated fat and 7mg cholesterol); Available carbs 44g; Fibre 9g

Cut back on the food bills and enjoy fresh-tasting, 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 the Money Saving Meals website (www.moneysavingmeals.com.au).

Chicken pilaf

'Veg' it up as much as you like adding a diced carrot or orange-fleshed sweet potato or butternut pumpkin (winter squash) and a sliced stick of celery with the onion and other greens (I love asparagus, broccolini, zucchini or broccoli) with the beans. The greener the better. I serve it with toppings such as chopped coriander, toasted cashews or a dollop of yogurt. Makes 6 serves (and there's only 1 pot to wash)

1 tbsp peanut or canola oil

1 onion, chopped

1 tbsp grated fresh ginger

500g (1lb) skinless chicken thigh fillets, fat trimmed, chopped into small chunks

1 tbsp mild curry powder

1½ cups (300g) basmati rice

3 cups (750ml) salt reduced chicken stock

200g (7oz) green beans, trimmed, sliced into 2.5cm (1in) lengths

90g (3oz) spinach leaves

Heat the oil in a large saucepan and cook the onion over low–medium heat for 4–5 minutes or until the onion is starting to colour. Add the ginger, chicken chunks and curry powder and stir for about 3 minutes, until the chicken is golden all over.

Add the rice stirring to make sure the grains are well coated then tip in the stock and bring to the boil. Stir, cover, reduce the heat to low and simmer for 10 minutes. Place the beans (and any other veggies you are using) on top of the rice, cover, and simmer for another 5 minutes. Add the spinach, remove from the heat and stand, covered, for 5 minutes. Stir the vegetables through the rice and serve with your chosen toppings.

Per serving

Energy: 1480kJ/355 cal; Protein 21g; Fat 11g (includes 3g saturated fat and 75mg cholesterol); Available carbs 42g; Fibre 2g

Busting Food Myths with Nicole Senior

Myth: Saturated fats aren't that bad.

Fact: A large body of evidence says a diet high in saturated fat increases blood cholesterol and heart disease risk.

However, an old idea has recently found new legs: the idea that saturated fats aren't that bad. The latest rumblings were published in *Lipids* (www.springerlink.com/content/0024-4201/45/10) based on a session at the 2009 Annual Convention of the American Oil Chemists Society (AOCS). The AOCS is an industry organisation 'for those interested in the science and technology of fats, oils, surfactants and related materials'.

One article reviewed the biochemical roles of saturated fatty acids. Yes, saturated fatty acids have a role in the diet. No-one is saying remove saturated fats completely from the diet – it is impossible because all dietary fats are composed of a mixture of fatty acids anyway. Incidentally, the body can synthesise its own saturated fatty acids, but we must consume essential omega-6 and omega-3 ALA polyunsaturates from our diet to do so.

Another article was in defence of dairy. Prospective cohort studies fail to show increased heart disease, diabetes and death rates from consuming dairy foods. In fact people who consume the most dairy tend to live longer lives and have an 8% lower risk of heart disease. This makes sense as dairy contains a bundle of important nutrients. These studies are problematic because of their imperfect measurement of dairy intake, for example there are inconsistencies between whether the dairy foods were reduced fat or not. This review does not constitute a green light for eating saturated fat. Dietary guidelines suggest we take the good and leave the bad by choosing reduced fat milk and yoghurt, and limiting butter.

Another article suggests that because human breast milk contains 50% saturated fatty acids there may be benefits we don't yet understand. This is placed best into context by one of the authors Professor J. Bruce German from the Department of Food Science and Technology at the University of California, 'The relationship between dietary intake of fats and health is intricate, and variations in factors such as human genetics, life stage and lifestyles can lead to different responses to saturated fat intake'. So perhaps what's best for infants is not best for adults.

So what is muddying the water on the saturated fat issue? In part, it's because many studies have only examined saturated fat intake and failed to consider that

unsaturated fat intake is protective and that too much of the wrong type of carbohydrate can be detrimental. There are several studies that have now investigated the role of GI and the risk of cardiovascular disease, and the majority have found a positive association between the GI of the diet and increased risk. The Harvard Nurses Health study, for example, showed that women consuming high GI carbs had twice the risk of having a heart attack over a 10 year period.

The bottom line? Replace saturated fats with unsaturated fats or low GI carbs in a balanced diet.

Nicole Senior MSc (Nut&Diet) BSc (Nut) is an Accredited Practising Dietitian and Nutritionist. For more information on heart-friendly eating and fabulous recipes low in saturated fat and high on flavour check out Nicole's books *Eat to beat Cholesterol* and *Heart Food* (www.eattobeatcholesterol.com.au).

GI Symbol News with Dr Alan Barclay

How scientists measure a food's GI value

GI testing has a very strict protocol in order to detect true differences in the glycemic potential of the carbohydrates in different foods. Here's how we test the GI of a food following the protocol set out by the International Standards Organization:

Step 1. Ten volunteers consume a fifty-gram carbohydrate portion of the reference food on three separate days. Pure glucose dissolved in water is the usual reference food, and its GI is set at 100. The test is carried out in the morning after an overnight fast. The solution is consumed within ten to twelve minutes, and blood glucose levels are measured eight times over the next two hours. The findings from those three days of testing are averaged to find each person's usual response to the reference food.

Step 2. Next, we measure the individuals glycemic response to a fifty-gram carbohydrate portion of the test food (e.g., approximately one cup of cooked rice) once, using exactly the same two-hour testing protocol.

Step 3. Then we calculate each person's response to the test food as a percentage of his or her average response to the reference food. We do this by plotting his or her blood glucose response to the test food on a graph and comparing this with the response to the reference food; the response can be summarized as the area under the curve—the exact value of which is calculated using a computer program.

Step 4. Finally, we average the responses of all ten volunteers to the test food; this is the GI value which we publish. If the average test food response area (i.e., the area under the curve) is only 40 percent of the reference food, then the GI of the test food is 40. Not everyone will give exactly the same number, of course, but the law of averages applies. If we tested them over and over again, people would all tend to congregate around the same number.

Because each person is his or her own control, testing foods in volunteers with diabetes or prediabetes gives approximately the same GI values as testing people who don't have diabetes.

In practice, the average result in the group of ten healthy people is the published GI value of the food. At least 240 blood glucose assays (the technical term for the test measuring the blood glucose) will have been made to generate that number. In some labs, up to 640 assays are made. So there is nothing crude about GI testing.

For example, the GI value of bread (70) means that the overall fluctuation in blood glucose after eating a serve of white bread will be about 70 percent of the effect of an equivalent amount of carbohydrate from pure glucose (GI value of 100).

If you want to know more about GI testing or find an accredited laboratory to test your food product, drop me an email: alan@gisymbol.com



For more information about the GI Symbol Program

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GI Update

Professor Jennie Brand-Miller's Low GI Diet Shopper's Guide 2011 out now

Australia's #1 low GI shopper's guide will help you make the switch to a low GI diet by putting the low GI choices into your shopping trolley and on the table. The 2011 edition is even easier to use and includes:

- A to Z tables with the GI (and GL) of over 1000 foods by food category such as 'Breads' and 'Breakfast cereals', 'Fruit, Vegetables'.
- In each food category, foods with a low GI have been separated from those with higher or unknown GI values.
- Handy household measures like cups and tablespoons for the sample serving sizes.

Professor Jennie Brand-Miller's Low GI Diet Shopper's Guide 2011 (Hachette Australia) is available in leading bookshops in Australia and NZ.

New GI values from GI Labs in Toronto

Idea organic agave syrups

These organic agave syrups are low GI sweeteners extracted from the agave plant which is large and spiky like a cactus, but in fact is Mexico's famous succulent that also gives us aguamiel, pulque, and tequila.

You can use agave syrup instead of sugar to sweeten food, desserts or drinks including tea and coffee. Keep in mind however, that it's about 1½ times sweeter than sugar so you don't need to use as much. One level teaspoon provides around 5g carbs and 20 calories (84kJ) along with small amounts of calcium, potassium and magnesium like other less refined sweeteners such as raw sugar, Logicane™, honey and 100% maple syrup.

- Light Standard Agave Syrup (70–78% fructose) – GI 28
- Light Premium Agave Syrup (78–85% fructose) – GI 22

For more information go to www.iidea.com.mx

CalNaturale Svelte (TM) protein drinks

These rich and creamy-tasting low GI protein drinks for sustained energy are made with fresh organic soy milk and organic rice syrup, sugar and inulin. They can be used as a meal replacement product, a pre- or post-workout pick-me-up or an anytime snack. Svelte (TM) drinks are dairy-free, gluten-free and certified kosher and come in 15.9 fl oz servings (470 ml or almost 2 cups). Each serving provides 16g protein, 35g available carbohydrate, 10g fat (naturally occurring in the soy milk) and 260 calories (1092 kJ). These drinks are also a good source of fiber (5g per serving).

- SvelteTM Chocolate Sustained Energy Protein Drink (with pure organic cocoa) – GI 21
- SvelteTM French Vanilla Sustained Energy Protein Drink (with pure organic vanilla) – GI 24

CalNaturale Svelte (TM) is part of California Natural Products, a leading natural foods company with a 30-year history of innovation and excellence. For more information: <http://sveltebrand.com/products>

GI Labs has moved

GI Labs is proud to announce that, due to increased demand, we have moved to a new, larger facility that is better equipped to meet your research needs. Our new facility is well-suited to the needs of our busy company, outfitted with numerous clinical testing areas, an upgraded analytical laboratory, well-ordered test kitchens, and office space for client meetings. Please contact us for a tour next time you are in Toronto!

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