Bring on the beans;
Gut bacteria and diabetes;
Exploring how gut microbes react to probiotic yogurt;
Nicole Senior investigates the myth that most people can't digest milk;
Prof Jennie Brand-Miller on diet and breast milk;
Emma Stirling with the scoop on yogurt;
Two low GI recipes to enjoy including one from Yotam Ottolenghi's new book: *Jerusalem*.

‘The 1.5kg (3.3 pounds) of bacteria that we carry in our intestines have an enormous impact on our health and well being. There is growing awareness that these resident microbes contribute to a wide array of critical body functions that can influence almost every aspect of our physiology from hormonal balance to metabolic rate, immune system function and inflammation. In this issue, we look at the growing body of evidence to suggest that disruptions to the normal flora of our GI tract may be implicated in a wide array of gastrointestinal and metabolic disorders including irritable bowel syndrome, obesity, metabolic syndrome and type 2 diabetes.

Good eating, good health and good reading.

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**Food for Thought**

**The gut microbiota – a new piece of the obesity puzzle?**

*Our GI (gastrointestinal) tract is home to a diverse collection of bacteria, viruses and archaea, collectively known as the gut microbiota. Patricia Lopez-Legarrea from the University of Navarra, Spain and Nicholas Fuller from The Boden Institute, The University of Sydney bring us up to date on recent research and describe a randomised controlled trial that they are undertaking to compare the effects of three different diets on microbiota composition.*

It is estimated that a healthy adult’s gut consists of at least 100 trillion (10 to the power of 14), bacteria. It’s well known that these bugs are integral to our wellbeing – evolution has aligned our interests. ‘We are not just on friendly terms with our gut bacteria – the relationship is infinitely more intimate than that – we are married to them … we are colonised by bacteria from birth, and potentially in utero,’ writes Katrina Ray in *Nature Reviews* (www.nature.com/nrgastro/journal/v9/n10/full/nrgastro.2012.165.html). ‘Indeed, our mothers play a vital part in providing the first building blocks for the development of our resident microbiota, jump-starting the stepwise colonisation of our intestines and the rest of the human
body through skin-to-skin contact and breastfeeding. Once the gut microbiota becomes established and stabilised by age 2–3 years, these bacteria have a crucial role in nutrition and health … they have a fundamental role in synthesising vitamins and in helping to breakdown non-digestible products that provide energy to the human body.’

Recent research in humans and animals now suggests that changes to the gut microbiota composition are also related to metabolic disorders such as obesity, metabolic syndrome and type 2 diabetes.

**Obesity** Back in 2004, Backhed and colleagues (www.ncbi.nlm.nih.gov/pubmed/15505215) observed that normal mice had 42% more adipose (fat) tissue compared with germ-free ones. Subsequently, they transplanted microflora from normal mice to the germ-free mice and observed that the germ-free mice had a 57% increase in their total body fat content in a period of two weeks. In 2005, Ley and colleagues (www.ncbi.nlm.nih.gov/pmc/articles/PMC1176910/) observed interesting differences in the microbiota composition when they compared genetically obese mice to normal-weight mice. The obese mice showed a greater presence of bacteria with a higher expression of enzymes related to energy extraction, bowel fermentation and to the reduction in stool residual calories. In subsequent work, they transplanted the microbiota from obese mice to normal-weight mice and found that they developed obesity within two weeks. Translating the findings of these animal studies to people is now an important area of research.

**Metabolic syndrome** Researchers at the University of Maryland School of Medicine have identified 26 species of bacteria in the human gut microbiota that appear to be linked to obesity and related metabolic complications. These include insulin resistance, high blood glucose levels, increased blood pressure and high cholesterol, known collectively as the metabolic syndrome, which significantly increases an individual's risk of developing diabetes, cardiovascular disease and stroke. The results of the study were published in *PLOS ONE* (www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0043052). ‘We identified 26 species of bacteria that were correlated with obesity and metabolic syndrome traits such as body mass index (BMI), triglycerides, cholesterol, glucose levels and C-reactive protein, a marker for inflammation,’ says the senior author, Claire M. Fraser, Ph.D., professor of medicine and microbiology and immunology and director of the Institute for Genome Sciences (IGS) at the University of Maryland School of Medicine. ‘We can’t infer cause and effect, but it’s an important step forward that we’re starting to identify bacteria that are correlated with clinical parameters, which suggests that the gut microbiota could one day be targeted with medication, diet or lifestyle changes.’

**What next?** Dietary intake is considered one of the main factors that modify the number and variety of our gut bacteria. In this context, we and other researchers from The Boden Institute at the University of Sydney are currently carrying out a 12-month, randomised controlled trial to evaluate the effects of three energy-restricted diets (500 calorie (2100kJ) per day deficit) on the composition of gut microbiota. The diets are:

- Low fat/lower GI (less than GI 55)
- High protein/moderate GI (protein 25% total energy)
- Mediterranean/moderate GI (omega-3 consumption greater than 1.3g).

Our study consists of a 6-month intervention period with one of the three diets, followed by a 6-month weight maintenance period with visits at 9 and 12 months. We will collect blood and
stool samples to perform the corresponding analyses. It is hoped that the findings will both help to pinpoint those people who will respond to dietary treatment and will optimise dietary strategies. We will be reporting our findings in about a year’s time, so watch this space.

**What’s New?**

**Bring on the beans.**

In *Archives of Internal Medicine* ([http://archinte.jamanetwork.com/article.aspx?articleid=1384247](http://archinte.jamanetwork.com/article.aspx?articleid=1384247)), Dr David Jenkins and colleagues report on a study that found consuming about 1 cup (190g) of cooked legumes (beans, chickpeas or lentils) helped people with diabetes manage their blood glucose. It also lowered total cholesterol and triglycerides. The 3-month study with a group of 121 people with type 2 diabetes found that a daily dose of beans had a greater effect on reducing blood pressure as part of a low GI diet compared with a high wheat (insoluble) fibre diet. Even better, after three months, hemoglobin A1c levels had dropped from 7.4% to 6.9% in people eating beans, while it had fallen from 7.2% to 6.9% in those getting extra whole wheat. Even though the drops were not huge says Jenkins, they were impressive in part because the whole-grain comparison diet is a healthy one and in part because people in the study were already on diabetes and blood pressure medications. ‘We hope that this could be the point that allows a person with diabetes to delay medication use,’ he said.

What about wind? The study didn’t find any more gastrointestinal complaints in the legume group, although the comparison group also got a lot of fibre, which could have drowned out a potential effect.

It’s easy to boost your bean intake – home-cooked or canned – simply top some toast with baked beans for a light meal, serve dhal with that curry, add chickpeas to stir fries, red kidney beans to chilli, lentils to a ragu, a 4-bean salad to that barbecue menu, and enrich casseroles and soups with beans and lentils. Here are some flavoursome favourites from *The GI News Kitchen* to try:


**Exploring how gut microbes react to probiotic yogurt.**

No matter what the advertisements are, or are not, allowed to say, it would be good to know if probiotic yogurt, in addition to its nutritional value, has a beneficial effect on the gut. A parallel series of human (twin) and animal (mice) studies ([www.ncbi.nlm.nih.gov/pubmed/22030749](http://www.ncbi.nlm.nih.gov/pubmed/22030749)) shows that daily consumption of yogurt does not significantly alter the gut’s bacterial makeup but does induce changes in the way bacteria metabolise carbohydrates. Jeffrey Gordon and colleagues took a closer look at the gut microbiomes of seven sets of twins and of mice who consumed a specific brand of yoghurt
over a 4-month period. They analysed the bacterial composition and specific gene expression patterns of both human and animal gut microbial communities before, during and after consumption of the yoghurt. Although they found that in both humans and mice, consumption of yogurt did not change the species and gene content of their gut microbial communities, further analysis of gut bacterial gene expression and of substances called metabolites in the urine of mice revealed that yoghurt consumption incited marked changes in many metabolic pathways, especially those related to carbohydrate processing. Although it remains unclear whether eating a yogurt a day will keep the doctor away, the results show that probiotic foods may change our gut microbiomes in subtle, complex ways that warrant further investigation.

**Dietitian Glenn Cardwell explains the difference between probiotics and prebiotics.**

‘You have probably heard of probiotics, healthy bacteria that help to keep your bowels in good health. They are often associated with yoghurts and supplements. Another term is prebiotics, compounds that are needed as food for the probiotics. Prebiotics naturally occur in bananas, asparagus, leeks, onions, garlic, chicory and wholegrains like wheat, rye, barley and oats. Asparagus, which is now in season in Australia, is one of the best dietary sources of inulin an important prebiotic that encourages the growth of healthy bacteria in the gut, which, in turn provides a barrier to gut infection. So support local produce and green your meals with fresh asparagus. Not only will you enjoy the flavour, you'll be getting plenty of fibre and natural prebiotics to keep you healthy on the inside. Want help cooking up ideas? Check out the Australian Asparagus Council’s free recipes (www.asparagus.com.au/Recipes%20&%20Tips/).’

**Gut bacteria could cause diabetes.**

New research published in *Nature* (www.nature.com/nature/journal/v490/n7418/full/nature11450.html) shows that the composition of our gut bacteria could play an important role in the development of type 2 diabetes. Researchers examined the intestinal bacteria of 345 people from China, of which 171 had type 2 diabetes. The team identified clear biological indicators that someday could be used in methods that provide faster and earlier diagnosis of type 2 diabetes. The research, also demonstrated that people with type 2 diabetes have a more hostile bacterial environment in their intestines, which can increase resistance to different medication. Similar studies carried out on people with type 2 diabetes in Denmark also discovered a significant imbalance in the function of their intestinal bacteria and composition. ‘It is important to point out that our discovery demonstrates a correlation. The big question now is whether the changes in gut bacteria can affect the development of type 2 diabetes or whether the changes simply reflect that the person is suffering from type 2 diabetes,’ says author Karsten Kristiansen from the University of Copenhagen.

**What’s new?**

[www.eatgoodcarbs.com](http://www.eatgoodcarbs.com) This website is dietitian Johanna Burani’s personal invitation to her virtual office. ‘Come in anytime. No appointment needed!’ she says. ‘By creating this blog, I plan on explaining how and why low glycemic good carbs prevent blood sugar highs and lows; help regulate blood fats; promote weight loss by suppressing hunger and cravings; increase energy and physical endurance.’ She also provides tips for food shopping and reading food labels for good carb ingredients, how to cook with good carbs, and how to find them when eating out. ‘Since I love to cook and spend a lot of time doing so in my homes in New Jersey and in Friuli (northeastern Italy), I’ll also share with you some of my original low GI recipes,’ says Johanna.
A regular contributor to *GI News*, Johanna is a Registered Dietitian and Certified Diabetes Educator with over 25 years experience in nutritional counseling. She is the author of the best selling *Good Carbs, Bad Carbs*, has co-authored five other books on glycemic index, and writes for mainstream diabetes magazines and websites as well as for professional publications. Although she loves to write and do research, her first love is her patients. A team player in an endocrine practice in Wayne, New Jersey, Johanna specialises in empowering people to improve their health with practical nutrition information that incorporates the concept of the glycemic index.

**Seven ways to calm your upset stomach** The medical term for persistent upper abdominal pain or discomfort without an identifiable medical cause is functional dyspepsia (indigestion) according to a new book from Harvard Medical School – *The Sensitive Gut* ([www.health.harvard.edu/special_health_reports/the_sensitive_gut](http://www.health.harvard.edu/special_health_reports/the_sensitive_gut)). Eating often triggers symptoms of functional dyspepsia. Sometimes the discomfort begins during the meal, other times about half an hour later. It tends to come and go in spurts over a period of about three months. Roughly 25% of the population is affected, and it hits men and women equally. If you suffer from indigestion (and you know it is indigestion and not an ulcer), here’s what they suggest you do to help get some relief.

- Avoid foods that trigger your symptoms.
- Eat small portions and don't overeat; try eating smaller, more frequent meals and be sure to chew food slowly and completely.
- Don't lie down within two hours of eating.
- Avoid activities that result in swallowing excess air, such as smoking, eating quickly, chewing gum, and drinking carbonated beverages.
- Reduce your stress. Try relaxation therapies, cognitive behavioural therapy, or exercise. An aerobic workout 3–5 times per week can help, but don't exercise right after eating.
- Get enough rest.
- Keep your weight under control.

**Glycosmedia App for iPhone and iPad** UK-based Glycosmedia runs a website and free digital weekly diabetes news service that lists the latest research, reports and news in diabetes for healthcare professionals and people who want keep informed about diabetes. The new Glycosmedia App will present the latest diabetes information as soon as possible after publication saving busy professionals from having to spend time trawling through the plethora of information available. The Glycosmedia editorial team broadcast the information immediately on the App and on Twitter linking news item references to the original sources. The information on the home screen of the App is presented by date, or can be browsed by category via another screen. Interesting articles can be saved to your Favorites folder and/or shared with colleagues by email or via Twitter. The App can be downloaded free from iTunes ([http://itunes.com/apps/glycosmedia](http://itunes.com/apps/glycosmedia)). For more information or to provide feedback, contact Jim Young, Editor-in-chief, Glycosmedia [jim@glycosmedia.com](mailto:jim@glycosmedia.com).

**Get the Scoop with Emma Stirling**

The scoop on yogurt.

Do you love yogurt? We do at *GI News*. Obviously it has a whole lot to do with yogurt’s low
GI that makes it a perfect, portable snack to get you through the afternoon. But it’s the package of nutrients, versatility and huge range of offerings that sees us getting down with dairy at many a meal.

**Know your ABCs** When shopping around for a yogurt, make sure you fully investigate the probiotic or friendly bacteria cultures. They sometimes have long scientific names most of us can’t pronounce, like *lactobacillus rhamnosus GG* or LGG. The three most common names are *acidophilus*, *bifidus* and *casei*, but there are many different strains and only some are backed up by scientific research. Scientific evidence is needed to show that the strain survives the acidic environment of the stomach, arrives and multiplies in the gut and helps promote positive health outcomes like boosting your immunity or beating the bloat. Most reputable brands have their probiotic strains and clinical studies available on their website.

**Build your bones** Calcium content of yoghurt varies, so make sure you compare the amounts of this valuable bone building nutrient per 100 grams on the nutrition information panel. Go for at least 80mg of calcium per 100 grams, which is around 10% of the recommended dietary intake. And check out new yogurts also boosted with vitamin D which assists calcium absorption.

**Take caution with portions** With luxuriously smooth, creamy textures, full fat (more than 4g fat/100g) yogurts should be treated as a calcium-charged alternative to cream, sour cream or mayonnaise, not a daily snack choice. It’s fine to have a dollop on your muesli and summer berries but make sure you share the tub around, as these yogurts often have three times the calorie content as reduced fat versions. Also keep in mind some tubs are labelled as containing 2–3 serves so you need to double or triple the per serve figures if you eat the whole pot. As a rule of thumb, stick to around 500 kilojoules (about 120 calories) at snack time.

**Waist not, want not** A recent scientific review published in the 2012 *International Journal of Obesity* found that including dairy foods such as milk and yogurt in a weight loss diet can help accelerate fat loss, especially metabolically harmful belly fat linked to an increase risk of insulin resistance, type 2 diabetes and cardiovascular disease. The review concluded that including three to four serves of dairy foods as part of a kilojoule-restricted diet led to greater weight and fat loss, compared to a standard calorie restricted diet that didn’t include the same serves of dairy every day.

**Get cooking** For a healthy tang use natural low fat yogurt in pancake mixture instead of milk, whip into a marinade for chicken with fragrant cumin or mint for char grilled lamb kebabs. Did you know? Like cream, yogurt can curdle if over-heated. So simply stir natural or Greek style yogurt in just before serving or mix in a little corn flour before adding to a hot dish. Enjoy!

**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 and a healthy serve of what’s in flavour.

**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 at [www.eatgoodcarbs.com](http://www.eatgoodcarbs.com). The photographs are by Sergio Burani. His food, travel and wine photography website is [www.photosbysergio.com](http://www.photosbysergio.com).

**Caramelised autumn fruit with yogurt sauce – Italian style**

Italians prefer their fruit to showcase their natural sweetness and this recipe does just that. The spices and natural sweeteners blend harmoniously with the cooked fruit. You might never dream of adding vinegar to fruit but leave it to the Italians! The balsamic vinegar blends together all the flavors of this compote as soon as it hits the palate. Serves: 6 (approx. 3/4 cup of fruit with 3 1/2 tbsp of sauce).

1 tbsp pinoli nuts – 54 nuts if you want to count them out!  
3 tbsp (40g) sugar ½ teaspoon ground cardamom  
2 medium apples  
2 small pears  
1 tbsp unsalted butter  
2 tbsp (30ml) balsamic vinegar  
1 cup fat free plain yoghurt  
2 tbsp (30ml) mascarpone (an Italian cream cheese)  
2 tbsp (30ml) honey  
½ tsp vanilla extract  
3 tbsp freshly grated orange zest (or 2 Australian tbsp)

Lightly toast the pinoli in a small cast iron pan and set aside.  
Mix the sugar and cardamom in a small dish and set aside.  
Wash, halve and core the fruit and cut into thick slice and set aside.  
Heat a large nonstick pan over a medium-high flame, add butter. When the butter has melted add the fruit slices and cook for 5 minutes, stirring frequently. Add the vinegar and mix well to coat the fruit. Continue cooking on medium-low flame for 2 minutes until the fruit is tender.  
Sprinkle the prepared sugar mixture over the fruit, mix well. Cook another minute to allow the sugar to melt. When ready, remove the fruit from the heat and set aside.  
Whisk the yoghurt, mascarpone, honey and vanilla in a small mixing bowl until smooth. Set aside.  
Place the fruit slices on a serving plate. Drizzle the sauce over the fruit. Sprinkle the nuts and orange zest on top. Serve at room temperature or chilled.

**Per serve**  
Energy: 747kJ/178cals; Protein 2g; Fat 5g (includes 3g saturated fat and 13mg cholesterol); Available carbohydrate 32g; Fibre 4g

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 our Money Saving Meals ([http://moneysavingmeals.com.au](http://moneysavingmeals.com.au)) packed with fresh produce including this recipe from Yotam Ottolenghi and Sami Tamimi’s new cook book: *Jerusalem*. It is published by Ebury Press and available from good bookshops and online. Be warned, the recipes are amazing. The book is addictive. Here at *GI News* we can't stop cooking from it. There's a large chapter on pulses and grains with countless low GI recipes you won't be able to resist trying ...
Na’ama’s fattoush

Arab salad, chopped salad, Israeli salad – whatever you choose to call it, there is no escaping it. Wherever you go in the city, at any time of the day, a Jerusalemite is most likely to have a plate of freshly chopped vegetables – tomato, cucumber and onion, dressed with olive oil and lemon juice – served next to whatever else they are having. It’s a local affliction, quite seriously. Friends visiting us in London always complain of feeling they ate ‘unhealthily’ because there wasn’t a fresh salad served with every meal.

There are plenty of unique variations on the chopped salad but one of the most popular is Fattoush, an Arab salad that uses grilled or fried leftover pita. Other possible additions include peppers, radishes, lettuce, chilli, mint, parsley, coriander, allspice, cinnamon and sumac. Each cook, each family, each community has their own variation. A small bone of contention is the size of the dice. Some advocate the tiniest of pieces, only a few millimetres wide, others like them coarser, up to 2cm wide. The one thing that there is no arguing over is that the key lies in the quality of the vegetables. They must be fresh, ripe and flavoursome, with many hours in the sun behind them. This fabulous salad is probably Sami’s mother’s creation; Sami can’t recall anyone else in the neighbourhood making it. She called it fattoush, which is only true to the extent that it includes chopped vegetables and bread. She added a kind of home-made buttermilk and didn’t fry her bread, which makes it terribly comforting.

Serves 6

200g (7oz) Greek yoghurt and 200ml (¾ cup) full-fat milk or 400ml (1½ cups) of buttermilk (replacing both yoghurt and milk)
2 large stale Turkish flatbread or naan (250g/9oz in total)
3 large tomatoes (380g in total), cut into 1.5cm dice
100g (3½ oz) radishes, thinly sliced 3 Lebanese or mini cucumbers (250g/9oz in total), peeled and chopped into 1.5cm dice
2 spring onions, thinly sliced 15g (½oz) mint
25g (1oz) flat-leaf parsley, roughly chopped
1 tbsp dried mint
2 garlic cloves, crushed
3 tbsp lemon juice
60ml (¼ cup) olive oil, plus extra to drizzle
2 tbsp cider or white wine vinegar
¾ tsp coarsely ground black pepper
1½ tsp salt
1 tbsp sumac or more according to taste, to garnish

If using yoghurt and milk, start at least three hours and up to a day in advance by placing both in a bowl. Whisk well and leave in a cool place or in the fridge until bubbles form on the surface. What you get is a kind of home-made buttermilk, but less sour.
Tear the bread into bite-size pieces and place in a large mixing bowl. Add your fermented yoghurt mixture or commercial buttermilk, followed by the rest of the ingredients, mix well and leave for 10 minutes for all the flavours to combine.
Spoon the fattoush into serving bowls, drizzle with some olive oil and garnish generously with sumac.

Tip: Try to get small cucumbers for this as for any other fresh salad. They are worlds apart from the large ones we normally get in most UK supermarkets. You could skip the
fermentation stage and use buttermilk instead of the combination of milk and yoghurt.

**Per serve**
Energy 1260 kJ/ 300 cals; 17 g fat (includes 6 saturated fat g); 2.5 g fibre; 7 g protein; 28 g available carbohydrate

**Busting Food Myths with Nicole Senior**

**Myth: Most people can’t digest milk.**
The fact that milk is a commonly eaten food throughout the world suggests we can and do digest it. The story of how this came to be is fascinating, and I was introduced to it by Glenn Cardwell, dietitian and fellow myth-buster, via Gregory Cochran and Henry Harpending’s book, *The 10,000 Year Explosion: How Civilization Accelerated Human Evolution*. The authors reveal that the ability to digest milk in adulthood started around 10,000 years ago just after humans first started to keep animals for food. Geneticists believe by pure chance a mutation occurred that maintained lactase levels into adulthood and this mutation spread through the gene pool because it conveyed a survival advantage. That is, it provided an important source of nutrition that kept adults healthy and able to reproduce—and thus carry on the genes for digesting milk. This ability spread through Europe and India. A similar scenario was also happening in Arabia where the milk came from camels. It was so successful that fossilised human remains shows 80 per cent of Europeans were able to digest milk 7,000 years ago.

**Lactose intolerance** is when a person does not produce sufficient amounts of lactose-digesting enzyme (called lactase). Lactose is digested by the enzyme lactase found in the cells that line the digestive tract. All of us have sufficient lactase to digest lactose until three–five years of age, after which it undergoes a genetically determined decline in the majority of people. In fact, all mammals (including dogs, cats, rats, mice, etc.) show this decrease. An Australian review estimated that lactose maldigestion (poor digestion of lactose) affects as few as 4% of adult Caucasians. But figures are higher among people of Asian origin, Aboriginal people and African-Americans. The amount of lactose that can be comfortably tolerated varies from person to person, but generally people with lactose intolerance can digest small amounts of lactose (such as the amount in a small glass of milk) without symptoms, especially if consumed as part of a meal.

The amount of lactose in yoghurt is much lower because the bacterial cultures break the lactose down into lactic acid (giving yoghurt its characteristic tart flavour). Hard cheese contains negligible lactose. For the supersensitive there are lactose-free milks and yoghurts available, and even lactase enzyme powder you can add to milk to do the digesting for you.

There are also those with **milk allergy** who must stay well away from anything dairy-based or they become ill; however, this unlucky group makes up less than 1 per cent of the adult population.

**Milk intolerance** (which is different to lactose intolerance) also occurs but no data is available on the numbers of people affected, although it is expected to be higher those with milk allergy (food intolerance is notoriously difficult to diagnose, requiring an elimination diet and food re-challenge supervised by an experienced dietitian).

**Getting enough calcium** is important for healthy bones and the prevention of osteoporosis as
you get older. You might think there are negligible consequences to avoiding dairy foods but a study published in the *American Journal of Clinical Nutrition* (http://ajcn.nutrition.org/content/early/2011/04/27/ajcn.110.009860) found people with self-perceived lactose intolerance had a much lower intake of calcium because they ate less milk, cheese and yoghurt.

Nicole Senior is an Accredited Practising Dietitian and Nutritionist and author of *Food Myths* available in bookshops and online and from www.greatideas.net.au

**GI Symbol News with Dr Alan Barclay**

**Better heart health with a low GI diet**

These days, most people are aware of the importance of cutting back the saturated fat and choosing the good fats for heart health. What they are much less aware of is that being choosy about the carbs they eat can also help prevent heart disease.

**Heart disease doesn’t just happen**

Your risk of developing it is determined by things you cannot change, such as genetic (inherited) factors and things you can do something about. Things you cannot change include: your ethnic background, being male, being older, having a family history of heart disease, being post-menopausal. Things you can do something about include: smoking, having high blood pressure, having high blood glucose levels, having high blood cholesterol, high triglycerides, and low levels of the ‘good’ (HDL) cholesterol, having high CRP (C-reactive protein) levels (a marker of low-grade chronic inflammation somewhere in the body), being overweight or obese and being sedentary (http://journals.lww.com/jcnjournal/Fulltext/2011/07001/The_Global_Burden_of_Cardiovascular_Disease.4.aspx).

That’s why public health programs around the world focus on encouraging you to quit smoking, be more active every day, lose weight, drop the salt (sodium) and cut back the saturated fat.

**The saturated fat message, however, is a little more complicated than was first thought**

While eating less saturated fat – particularly from fatty processed meats – is prudent advice, we now know that what you replace it with is critical when it comes to preventing heart disease. For example, replacing saturated fats with quality unsaturated fats like olive, peanut and sesame oils and eating a handful of nuts can reduce your risk of developing heart disease by reducing the ‘bad’ LDL cholesterol and increasing the ‘good’ protective high-density-lipoprotein (HDL) cholesterol. On the other hand, replacing saturated fats with highly refined carbohydrate (sugars, oligosaccharides and starches) does not reduce your risk at all (www.ncbi.nlm.nih.gov/pubmed/21270379).

**Carb quality counts**

A new systematic review by Mirrahimi and colleagues (http://jaha.ahajournals.org/content/1/5/e000752.full) has added further evidence to the message that the quality and amount of carbohydrate you eat really counts. When they reviewed 12 population-based studies (230,000 people followed up over a period of 6–25 years and nearly 7,000 heart attacks) they found that women who ate a high GI (59) or GL (160) diet had a significantly increased risk (26% and 55%, respectively) of having a heart attack, compared to women who consumed a low GI (51) and GL (95) diet.

However, they found no association between GI or GL and risk of having a heart attack in
men in these particular studies. Why? Well, apart from the fact that there were nearly three times more women than men in the combined studies and that women may report their dietary habits more accurately, we need to remember that part of the protection that women have from heart disease may be related to their normally high ‘good’ (HDL) cholesterol levels. As high GI and GL diets tend to reduce HDL cholesterol concentrations, this may disproportionately increase heart disease risk in women, especially after menopause. At the same time, high-GI diets may raise triglyceride levels, which may also increase women’s risk. Needless to say, more studies in men are of course needed to investigate this issue further.

**The bottom line** Routinely advising people to ‘eat less saturated fat’ may not be sufficient to reduce their risk of having a heart attack or stroke. Health professionals and heart health organisations need to encourage people to replace saturated fats with quality unsaturated fats and/or low GI carbs.

**The GI Symbol, making healthy low GI choices easy choices**

For more information about the GI Symbol Program

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**GI Update with Prof Jennie Brand-Miller**

Prof Jennie Brand-Miller answers your questions.

**I am breastfeeding my baby. What’s the connection between my diet and my milk?**
In well-nourished women, there’s no real connection between your diet and your ability to produce milk. Most mothers will draw on stores built up during pregnancy to supply the building blocks of human milk. From day to day, whatever you eat, the major macronutrients – protein, fat, carbs – in your milk will remain surprisingly constant. Its energy yield will be about 250–300 kilojoules per 100 millilitres. But some vitamins and minerals will be influenced by the quality of your diet.
**Protein** Compared with the milk of other mammals, human milk has a very low protein concentration, less than 1 gram per 100 millilitres. By six months, it’s even less. The proteins in human milk supply all the essential amino acids for building new tissues, hormones and enzymes in your infant. They also protect against infection, help the synthesis of milk sugar (lactose) and carry some of the minerals your baby needs.

**Fat** This is the most variable component of human milk. It provides not only energy but also serves to carry the fat-soluble vitamins and hormones. In well-nourished women, fat averages 4 grams per 100ml. Interestingly, the higher the mother’s body fatness, the higher the level in their milk. What’s more, the nature of the fat in your diet is reflected in your milk. For example, if you consume the long chain omega-3 fats found in many fish, then your milk will also be high in these special fats.

**Carbs** The main carbohydrate in milk is a sugar called lactose that is similar in structure to table sugar (sucrose) but not as sweet to taste. Interestingly, human milk has the highest concentrations of lactose of any mammal’s, with around 7 grams per 100ml at peak lactation, almost double that of cows’ milk. One of the reasons for the high concentration may be the glucose requirements of our energy hungry brain. There is another form of carbohydrate in human milk that is often overlooked, even though there may be as much as 1 gram per 100ml (more than the weight of protein). Called ‘oligosaccharides’, they are complex sugars that remain undigested in the small intestine, but discourage pathogens in the small intestine and facilitate the growth of friendly bacteria in your baby’s large bowel. The beneficial bacteria produce substances that inhibit pathogens and encourage a healthy large intestine. The oligosaccharides in human milk may be another reason that breastfed babies suffer less gastrointestinal disease.

**Vitamins and minerals** The concentrations of water-soluble vitamins (vitamins C, B1, B2, B6, etc.) in your milk are directly linked to your current intake of these vitamins. It’s one of the best reasons to consume a healthy diet throughout lactation. The fat-soluble vitamins (A, D, E and K) are more constant, and mainly determined by your body stores. It means that any short-term deficits won’t affect the levels in your milk. The concentrations of minerals also appear to be unaffected by your short-term intake. However, it means that if you don’t eat well, your stores are being depleted as lactation progresses. Your next baby may not be as well off if you neglect your own needs during this important stage of life.

Next month I’ll look at the nutrition recommendations during lactation.

This is an edited extract from my latest book (with Dr Kate Marsh and Prof Robert Moses), *The Bump to Baby Low GI Eating Plan for Conception, Pregnancy and Beyond* (Hachette Australia). You can visit us at [http://bumptobabydiet.com](http://bumptobabydiet.com).

We are delighted to let *GI News* readers know that a US edition is on the way. The publisher is Matthew Lore of The Experiment. Matthew has published many of our books in the past and we are very happy to be working with him on this. We will keep you posted re publication details.

**New GI values from GI Labs in Toronto**

Kit’s Organic Fruit & Nut Bar – New low GI snack bar.
Clif Bar & Company is a privately owned American company based in Emeryville California that produces a range of organic foods and drinks for people on the go. Their latest product, Kit’s Organic Fruit & Nut Bar, is a gluten-free, soy-free and dairy-free fruit and nut snack bar that’s USDA-certified organic. ‘When I stepped back to think about what I’d want in a new snack, I knew it had to be organic, it had to be made with simple ingredients and it had to be delicious,’ says co-CEO Kit Crawford. ‘My appreciation for organic food began at a very young age, when my parents instilled in me the values of growing your own food and caring for the land.’ Available flavours include:

- Berry Almond: GI 33, available carbohydrate 22g, fibre 5g, GL 7
- Cashew: GI 27, available carbohydrate 24g, fibre 3g, GL 6
- Chocolate Almond Coconut: GI 29, available carbohydrate 20g, fibre 5g, GL 6
- Peanut Butter: GI 26, available carbohydrate 21g, fibre 4g, GL 5

Visit their website (www.clifbar.com/food/products_kits_organic/) for nutrition facts and list of ingredients.