



THIS MONTH: Tips on cultivating a healthier gut microbiome; Reducing metabolic risk factors if you have diabetes; Ted Kyle reports on studies that show how whole grains and fibre work to benefit weight management; Dr Alan Barclay on the FDA's new ruling on dietary fibre – it has to be beneficial; Prof Jennie Brand-Miller and nutrition follies of the past – the world protein gap; Dietitian Nicole Senior checks out CocoWhip's probiotic claims; Keep carbs looks at FODMAPs; Two low-FODMAP recipes plus Kate Hemphill's Crusted beef with green chilli rice.

FOOD FOR THOUGHT

FEEDING OUR BENEFICIAL GUT BACTERIA

Just as we can cultivate healthy soil for the garden, there is growing evidence that we can cultivate a healthier gut microbiome. Most beneficial bacteria thrive on a healthy diet of soluble fibres and resistant starch – and they get these from good carbs.

Soluble fibre is the fibre made famous by the 1990s "oat bran revolution". Oats contain a kind of soluble fibre called beta-glucan that can help lower LDL ("bad") cholesterol. Soluble fibre can also help modulate blood glucose levels – but whether it does so or not will depend in part on the amount of food processing and of course how much of it is eaten.



Often thick and jelly-like (viscous) in solution (water), soluble fibre remains viscous even in the small intestine. What this means is that it thickens the mixture of food entering the digestive tract and therefore slows down the time it takes for the fibre to pass through the stomach and small intestine. Essentially soluble fibre makes it hard for the digestive enzymes to move around and do their job of breaking down carbohydrates into smaller sugars (e.g., glucose), which is why foods with more soluble fibre tend to have lower GI values.

Where do we get it? "Porridge or bircher muesli for breakfast could start ticking boxes early in the day," says dietitian Nicole Senior. "There are a variety of other foods that contain soluble fibres as well, such as pectins and gums in fruits such as apples, oranges, passionfruit, mangoes, avocados and berries and vegetables such as Brussels' sprouts, sweet potato, eggplant (aubergine), carrots and asparagus. Every mouthful of fruit salad, eggplant dip or baked vegetables is doing you good. Pulses and legumes such as lentils, soy beans, kidney beans and split peas are also good sources of soluble fibre. Aim to include legumes in two meals a week: baked beans on toast (or a falafel wrap) counts as one, and adding lentils to your pasta sauce could be the other; Easy."

Foods rich in soluble fibre also play a key role as prebiotics, the non-digestible components of plant foods that promote good gut health by feeding the friendly bacteria (probiotics) in the large intestine (bowel). What happens is that the fibres are not broken down and metabolised during digestion, instead they go through the stomach and small intestine into the large intestine where hordes of good bacteria waiting for a feed greet them enthusiastically and set to work.



Resistant starch. Many scientists categorise resistant starch as another form of dietary fibre these days because of what it does. It is, however, starch that resists digestion and absorption in the small intestine and zips through to the large intestine largely intact to be fermented into short chain fatty acids, like acetate, propionate and butyrate by those good gut bacteria we have down there. Current research suggests it may well be as important as fibre in helping reduce the risk of colorectal cancer, so it has a lot of fans.

It's found naturally in unprocessed cereals and whole grains, firm (unripe) bananas, beans and lentils. But you can create it in your own kitchen when you make potato, rice or pasta salad – starchy foods that you cook and then cool. It's the cooling process that makes the starch resistant to digestion.

What about eating probiotics? Eating live varieties of healthy bacteria can help to improve the balance of bacteria in the gut. For years, the yoghurt industry has been extolling the virtues of yoghurt and fermented milk with claims that it contains *Lactobacillus acidophilus*, *L. casei* or *L. bifidobacteria*. These three varieties are generally beneficial to health. However not all probiotics live up to the claims made about them.

What can you do? To make sure the bacteria gets through to your bowels alive (after going through the harsh stomach environment), buy fresh products well within their use by date. The number of live bacteria decreases rapidly as the product ages – particularly if it has not been stored correctly. Even half an hour in the boot of your car on a hot day is enough to kill off most useful bacteria. You can also increase the amount and quality of prebiotics in the foods and beverages that you consume, which will encourage the natural probiotics in your gut flora to thrive and multiply – something they love doing given half a chance.

NEWS BRIEFS

RISK REDUCTION

There's no single diabetes diet that's best for everyone, but a recent [study](#) reports cutting back on fat and added sugars and opting for “slowly absorbable carbohydrates” (the low GI ones) along with getting plenty of fibre was associated with significantly lower triglycerides, HbA1c and CRP (a marker of inflammation) in people with diabetes.

Abnormal levels of blood fats (cholesterol and triglycerides) are part and parcel of diabetes and pre-diabetes. It's important to act on these metabolic risk factors if you have diabetes as high blood fats increase the risk of heart attack or stroke, or of developing peripheral vascular disease (for example in the lower limbs, especially the feet).

Recommended ranges for blood glucose, blood fats and blood pressure

Source: General practice management of type 2 diabetes – 2014–15, RACGP and diabetes Australia, 2014

HEALTH MEASURE	RECOMMENDED RANGE
Blood glucose levels*	6–8 mmol/L (108 - 144 mg/dL) fasting 8–10 mmol/L (144 - 180 mg/dL) after a meal or snack
Glycated haemoglobin (HbA1c)*	Less than or equal to 7% (range 6.5–7.5) Less than or equal to 53 mmol/mol (range 48–58) Total less than 4.0 mmol/L
Blood cholesterol	HDL greater than or equal to 1.0 mmol/L (40 mg/dL) LDL less than 2.0 mmol/L (80 mg/dL)

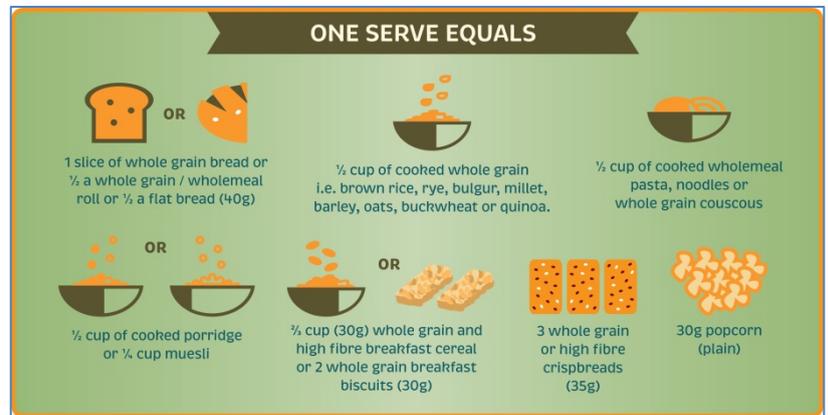


Blood triglycerides	Less than 2.0 mmol/L (180 mg/dL)
Blood pressure	Less than or equal to 130/80 mmHg

* Primarily for people with type 2 diabetes or pre-diabetes. People with type 1 diabetes may have different targets that should be determined in conjunction with their health professional team.

YES, WHOLE GRAINS ARE THE REAL DEAL FOR METABOLIC HEALTH

Whole grains have been front and center in dietary guidelines for decades now. Epidemiology [studies](#) have long found that whole grains and dietary fiber correlate with health benefits such as better glycemic control, better insulin sensitivity, less heart disease, and less weight gain. Two studies in the *American Journal of Clinical Nutrition* offer experimental evidence to support those links.



Infographic: Grains & Legumes Nutrition Council - www.glnc.org.au

In a six-week randomized trial, J. Philip Karl and colleagues compared the effects of whole grains and refined grains on metabolic function. They found that people consuming whole grains for six weeks burned more energy and absorbed fewer calories from their food. The result was 92 fewer calories per day retained – and potentially stored as fat – by people eating whole grains. Hunger, fullness, and diet satisfaction were no different between the two groups. Some indications of a trend toward better glucose tolerance in the whole grain group fell short of statistical significance. Data from the same subjects in a second paper show modest favorable effects on gut microbiota, and on markers of immune function and inflammation.

“It’s reassuring to have this new evidence,” says Karl: “Many previous studies have suggested benefits of whole grains and dietary fiber on chronic disease risk. This study helps to quantify how whole grains and fiber work to benefit weight management, and lend credibility to previously reported associations between increased whole grains and fiber consumption, lower body weight and better health.”

Click [here](#) for study on energy balance and [here](#) for the study on microbiota. For further perspective, click [here](#).

Thanks to Ted Kyle of ConscienHealth <http://conscienhealth.org/> for this report.

PERSPECTIVES WITH DR ALAN BARCLAY

BENEFICIAL FIBRE?

While the amount and type of fats (saturated vs unsaturated), carbohydrate (starches vs sugars) and even protein (animal vs vegetable) required for good health and longevity are at times fiercely debated, most nutrition experts agree that dietary fibre is beneficial to human health and that most of us need to eat more.

It’s generally agreed that we need to consume at least 3.3 grams of fibre for every 1000 kJ (240 calories) of energy that we consume each day – for an average woman that’s [25 grams a day](#); and [30 grams a day for an average man](#).



Few people achieve this because most don't consume enough fruit, vegetables, legumes and wholegrains – the natural sources of dietary fibre. In Australia, we only consume around 2.5 grams per 1000 kJ and fibre intakes appear to be dropping from 23.1 grams a day in 1995 to 22.9 grams in 2011/12 thanks to the popularity of diets that are typically lower in fibre such as fructose free (little or no fruit), gluten free (few grains), low-carb and paleo (few carbs at all) etc.



The food industry has stepped up to the proverbial plate, and is adding back, or enhancing, the amount of fibre in processed foods – often by adding in isolated or synthetic dietary fibres. This helps companies make positive nutrition claims like “high in fibre” or “good source of fibre”, and achieve a higher health star rating. Dietary fibre is a criterion for many nutrition profiling tools such as those used in Australia's health claims system and the increasingly popular Health Star Rating System where more fibre generally means more stars.

However, will the simple addition of isolated or synthetic dietary fibres to processed foods make them as healthy as foods that are naturally good sources of dietary fibre like fruit and veg and legumes? The answer is we really don't know yet – there are many different types of fibre and we do not know if all are truly beneficial. And perhaps dietary fibre is just a marker for an all-round healthy diet that does have lots of fruit and veg and legumes?

With this in mind, the [US Food and Drug Administration](#) have recently narrowed its definition of dietary fibre. The new rule defines “dietary fiber” as “non-digestible soluble and insoluble carbohydrates (with 3 or more monomeric units), and lignin that are intrinsic and intact in plants” and “isolated or synthetic non-digestible carbohydrates (with 3 or more monomeric units) determined by FDA to have physiological effects that are beneficial to human health such as lowering blood glucose and cholesterol levels, increasing feelings of fullness (satiety) resulting in reduced calorie [kilojoule] intake, and improving bowel function.”

The definition specifies that the following isolated or synthetic fibers have been determined by FDA to have physiological effects beneficial to human health: β -glucan soluble fiber, psyllium husk, cellulose, guar gum, pectin, locust bean gum and hydroxypropylmethylcellulose. FDA intends to publish a separate notice to seek comments and evaluate the scientific data on inulin, oat fiber, soy fiber, pea fiber, wheat fiber, sugar cane fiber and sugar beet fiber, amongst others.

Hopefully other food regulatory agencies around the world will follow the FDA's lead to ensure only proven beneficial dietary fibres are added to our food supply.



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NUTRITION FOLLIES WITH PROF JENNIE BRAND-MILLER

Nutrition folly #2: The world protein gap

Other incantations:

- “Kwashiorkor is the most serious and widespread nutritional disorder known to medical and nutritional science.” (WHO/FAO, *Kwashiorkor in Africa*)
- “In many parts of the world the majority of children suffered some protein deficiency.” (Waterlow et al, 1960)
- “Every doctor, nutritionist or political leader concerned with the problem of world hunger has now concluded that the problem is one of protein malnutrition.” (Gounelle de Pontanel, 1972)



FACT: “The assumption that kwashiorkor was the world’s most common manifestation of severe malnutrition in children was largely based on 1952 survey results from parts of Africa where kwashiorkor was common. This limited survey was assumed to be typical of the whole world but that was certainly not the case in Asia for example where most of the world’s malnourished children were then located.” ([Dr Geoffrey P Webb](#)).

“The Great Protein Fiasco” is what this is now known as. Unless you’re of a certain vintage, you won’t be aware of this very embarrassing chapter in the history of nutrition. But, it’s worth remembering because you can hear its echoes in today’s dietary dogmas. I read Professor Donald McLaren’s [Dogma Disputed: The Great Protein Fiasco 1974](#) as a young PhD student and learned early in my career the importance of heeding the lessons of the past.

The “protein gap” story begins in the 1930s, a time when scientists were making exciting discoveries about vitamins, minerals, amino acids and fatty acids and their critical roles in nutrition and health. In 1933, Dr Cicely Williams who was working in Africa in the Gold Coast (present day Ghana) published an article in *Archives of Diseases in Childhood* that described a deficiency disease caused by an unknown amino acid or protein deficiency that became known as *kwashiorkor*. She reported characteristic signs in the hair, skin and body that distinguished it from wasting from a deficiency of calories.

From the 1950s, experts working for WHO and FAO (organisations formed after the Second World War) decided that kwashiorkor was the “most serious and widespread nutritional disorder known to medical and nutritional science”. The United Nations Expert Committee on Nutrition of FAO/WHO convened the Protein Advisory Group in 1955, hoping to convince the UN that there was an impending protein crisis. Politicians and scientists were vocal on the importance of the issue.

Protein malnutrition became the definition and the cure was skim milk. Meanwhile, millions of other children suffered a “mere” wasting disease called *marasmus* that resulted from overall deficiency of calories rather than protein. However, many children had degrees of both kwashiorkor and marasmus and by the early 1960s, they were merged under the term *protein-energy malnutrition*. However, in practice, McLaren reminds us the emphasis was the *protein gap* and the need for more and better quality protein. FAO announced “the No 1 problem for national agricultural departments is the production of protein foods of good quality”.

The global food industry response was immediate. Novel sources of protein, such as fish meal and algal products, gluten and textured vegetable proteins (that were made to taste and look like meat) were formulated and sold or donated by high income countries to poorer developing countries. In



the US, they produced corn-soy-milk and wheat-soy blends. Guatamala's *Incaparina* became famous around the world and the Australian milk biscuit was born.

Some scientists were sceptics, but few were willing to ruin their academic reputations. They were afraid to say anything for fear of having their credibility questioned and financial support cut off. McLaren was brave, speaking out on the lack of scientific evidence to support the consensus opinion. His attempts to argue the case at meetings were deleted from reports he says.

But as McLaren points out, scientists bear a responsibility to ensure that *both* sides of the story are considered carefully because in this case the welfare of undernourished children was at stake. While it is common to see a cost-benefit analysis, a cost-detriment analysis was also needed. The negative aspects of a focus on the wrong target included the lack of progress that would have been made with better use of the same human and financial resources. The protein case was built on general ignorance of food composition and erroneous generalisations made from limited survey data from parts of Africa that was assumed to be typical of the whole world. It wasn't.

So where do we stand today? In most instances, childhood malnutrition is the result of an energy deficit (not enough food) rather than a protein gap. If a child gets enough food, they will nearly always get an adequate amount of protein with a balanced pattern of amino acids. We also know that dietary factors are of secondary importance in childhood malnutrition – the primary causes are poverty, ignorance, poor housing, poor hygiene and lack of family planning.

When it comes to protein, nutrition scientists are still wondering what levels of protein intake are harmful and what the ideal ratio of plant to animal proteins is. In high income countries, most people eat more protein than is strictly needed, yet many scientists believe that more is better because protein is satiating and reduces the chance of excessive calorie intake.

As for child health pioneer Dr Cicely Williams, she played no part in the protein gap fiasco that followed her early findings. Indeed, on her 80th birthday she said she had been obliged to spend the last 20 years of her life trying to debunk kwashiorkor. [She went on to lead an extraordinary life and her achievements are many.](#)



Professor Jennie Brand-Miller (AM, PhD, FAIFST, FNSA, MAICD) is an internationally recognised authority on carbohydrates and the glycemic index with over 250 scientific publications. She holds a Personal Chair in Human Nutrition in the Boden Institute of Obesity, Nutrition, Exercise and Eating Disorders and Charles Perkins Centre at the University of Sydney. She is the co-author of many books for the consumer on the glycemic index and health.

FOOD UN-PLUGGED

Nicole Senior pulls the plug on hype and marketing spin to provide reliable, practical advice on food for health and enjoyment.

COCOWHIP

Good gut bacteria are the new “black” and the term “probiotic” is part of daily parlance. But probiotic science is young and unproven. What we do know is that different probiotics have different benefits – they're not a blanket wellness tonic. As they say in the science classics, more studies are needed. However, this hasn't stopped the influx of “probiotic” foods such as the latest probiotic *Instagram* sensation CocoWhip entering the market with big health claims.





CocoWhip is a coconut water based soft serve dessert joining [fermented](#) sensations like kombucha and kefir on the gut health bandwagon. It’s a vegan, gluten and dairy-free frozen treat that says it is made with “highly nutritious superfoods” with “far superior nutritional value to any other frozen dessert on the market including Acai Bowls & Frozen Yoghurt Desserts.” This is a bold claim, so we thought we would see how it stacks up alongside acai bowls and frozen yoghurt desserts, nutrient for nutrient (no added toppings).

What’s in CocoWhip?

Here’s what they tell us we’ll be tucking into when we tuck into Original Coconut CocoWhip. (The four CocoWhip variants, have additional flavor ingredients which are listed on their [website](#).)

“(uses only) Coconut Water, Organic Bio-Fermented Coconut Powder & Vegetable Sourced Stabilisers”.

Product ingredients listed on the Nutrition Information Panel

“Coconut Water, Vegan Premix (CocoWhip Coconut Powder, Corn Starch [Non GMO], Natural Sweetener [Xylitol], Coconut Sugar, Inulin, Guar Gum, Carob Bean Gum, Vegan Mono-diglycerides), Coconut Probiotic (Bio-fermented Coconut Powder, Freeze Dried Coconut Water, Lactobacillus Acidophilus, Lactobacillus Plant Arum)”

Unless you count the added probiotics, we can’t spot any “highly nutritious superfoods” in the ingredient list. There are lots of additives including the sugar alcohol xylitol. Why? Because basically they are transforming coconut water into a creamy ice cream look-a-like that make the product work, have good mouth feel and taste good.

Does CocoWhip have “far superior nutritional value to any other frozen dessert”?

We put together the following table so you can see for yourself how, nutrient for nutrient, a 100-gram (that’s about 3½ ounces) serving of Original Coconut CocoWhip compares with the same size serving of Acai Bowl, Frozen Yoghurt Desserts and Soft Serve Ice-cream. The nutrient data is drawn from the manufacturer (CocoWhip), and from published nutrient databases (Acai Bowl, Frozen Yoghurt Dessert and Soft Serve Ice-cream).

Nutrients	<u>CocoWhip</u> (100 grams)	<u>Acai Bowl</u> (Jamba Juice brand) (100 grams)	<u>Frozen Yoghurt Dessert</u> (100 grams)	<u>Soft Serve Ice-cream</u> (100 grams)
Energy – kilojoules	404kJ	339kJ	682kJ	729kJ
Energy – calories	96 calories	81 calories	162 calories	174 calories
Protein	0.1g	1g	4g	4.1g
Fat	3.7g	0g	6g	5g
— Includes saturated fat	3.3g	0g	3g	3.4g
Carbohydrates	16.1g	13.1g	24g	29g
— Includes sugars	7.9g	12g	24g	20.9g
— Includes starches	Not provided	Not provided	0g	8.1g
Sodium	19mg	14mg	87mg	64mg
Calcium	Not provided	83.6mg	143mg	93mg

Unless you are looking for a low-calorie, low-carb treat, we can’t see how CocoWhip is “nutritionally superior” apart from its added probiotics.

What about the probiotic claims?



On their website, CocoWhip state this soft serve dessert contains “Biofermented Probiotics for gut & intestinal health”. In fact, it is “loaded with bio-fermented freeze dried coconut water powder providing the equivalent (amount of probiotics) of over 10 cups of yoghurt” they tell us.

We asked CocoWhip about the probiotic claims. While they could name the strains, they were unable to provide backup evidence to answer the following questions regarding the actual amount and proven effectiveness of the probiotics added to their product:

- What is the dose of probiotic in one serve of CocoWhip?
- Are the probiotic bacteria able to survive exposure to stomach acid and bile on its way to the gut?
- Are the probiotic bacteria able to survive manufacturing and storage conditions (e.g. temperature, acidity, oxygen availability)?

Limited [studies](#) have found that *Lactobacillus acidophilus* and *Lactobacillus plantarum* (the bacteria in CocoWhip) may be probiotic (beneficial to the gut) and may reduce the symptoms of IBS. However a [systematic review](#) found these particular probiotics are only effective in reducing IBS symptoms if consumed daily for at least 4 weeks. But, CocoWhip is a treat food not a core food, so eating it daily is not recommended. A better way to get daily probiotics is in yoghurt fortified with extra probiotics, which will also provide nutrients such as protein and calcium that are lacking in CocoWhip.

The un-plugged truth

CocoWhip is a tasty frozen treat. The manufacturer provides no evidence to support their probiotic claims “for gut & intestinal health”, or what makes CocoWhip “nutritionally superior” to other frozen desserts. If you like it, enjoy it occasionally.



— Thanks to Rachel Ananin APD (TheSeasonalDietitian.com) for her assistance with this article.

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KEEP GOOD CARBS AND CARRY ON

FODMAPS

FODMAPs are a natural part of the good carb foods most of us need to eat more of – fruit; vegetables; dried beans, chickpeas, lentils; and whole grains. Here’s what FODMAPs (it’s an acronym) are and where you’ll find them plus tips on choosing low FODMAP carbs that will help you up your fibre intake if you have diagnosed IBS.



The **F** is for fermentable, the process through which friendly bacteria in the large intestine such as *Ruminococcus gnavus* break down the undigested parts of food such as soluble fibre in dried beans to produce short chain fatty acids like butyrate which provide nutrition for the cells that line our gut. Gas (hydrogen, methane, and carbon dioxide) is simply a by-product of the “fermenting”.



The **O** is for oligosaccharides – the fructo-oligosaccharides found naturally in fruits and vegetables such as asparagus, bananas, chicory root, garlic, Jerusalem artichokes, leeks, legumes, onions and wheat; and in wholegrain foods, especially rye and galacto-oligosaccharides in dried beans, chickpeas and lentils. They are actually a form of dietary fibre and they play a role as prebiotics, the non-digestible components of plant foods that promote good gut health by feeding the friendly bacteria (probiotics) in the large intestine (bowel). Inulin is one you will increasingly see on food labels as manufacturers add it to products to boost fibre content and reduce added sugars.



The **D** is for disaccharide. In this case, lactose, the primary carbohydrate in all mammals' milk—cow, goat, sheep, buffalo, camel, and human and in the soft cheeses and yoghurt made from milk. Lactose needs to be broken down into its component sugars, glucose and galactose, before the body can use it. Lactase, a lactose-breaking, genetically controlled enzyme located in the small intestine, does this for us. Until we are three or four years of age, most (35 percent) of us have sufficient lactase to digest lactose. After this, lactase production virtually grinds to halt in many (65 per cent) people (as well as in animals, including dogs, cats, rats, mice, etc.).

The **M** is for monosaccharide. In this case fructose, the natural sugar found in fruit, which can be a problem *when consumed in excess of glucose*. Research shows when we consume equal amounts of glucose and fructose together (i.e., 50 percent fructose/50 percent glucose, as in sucrose or table sugar), there is no evidence of malabsorption in most people. But consuming fructose on its own is a different story and lots of people have fructose malabsorption. Some people can absorb less than 15 grams of fructose (in solution – water), others have trouble with 30 to 40 grams. Most of us will suffer from flatulence and diarrhea consuming 50 grams or more of pure fructose.

The **P** is for polyols, the sugar alcohols (erythritol, isomalt, lactitol, maltitol, mannitol, sorbitol, and xylitol) found naturally in many fruits and vegetables. They have been used as sugar substitutes in foods and drinks for many years as they provide fewer calories than regular table sugars and because the body treats them as dietary fibre, they have less effect on blood glucose levels. The downside: they can have a dire laxative effect. The upside: they are “tooth friendly”.

Irritable bowel syndrome and FODMAPs

FODMAPs somehow got hitched to the popular “free-from” diet bandwagon when research found that for many people (but not everyone) cutting back on foods rich in FODMAPs may improve common IBS symptoms – bloating and distension, excess wind, abdominal pain and altered bowel habits (diarrhoea and/or constipation).

If you suffer these distressing symptoms, please don't self-diagnose and immediately rush out and buy a low FODMAP diet book because a friend told you it worked for her and she feels so much better. Please see **your** doctor first and get a clear diagnosis as to the cause of **your** symptoms – these very same symptoms can also be seen in other gastrointestinal diseases and what you may really need is prompt medical attention not simply a change of diet.

If you do have IBS, you can trial a low-FODMAP diet for 6 to 8 weeks with the help of a registered (accredited) dietitian (they'll have RD or APD after their name) to see if your symptoms decrease or go away completely. If they do, your dietitian can then help you with a systematic reintroduction of FODMAP-containing foods to determine which kinds of carbohydrates are causing your symptoms (everyone is different) and how much your system can tolerate before any symptoms recur.



Strict low-fodmap diets are not designed to be consumed for long periods of time because they eliminate so many healthy foods. They are simply for diagnostic purposes. The end goal is to ensure that you enjoy a healthy diet with as wide a variety of foods as possible and without distressing gut symptoms.

Remember, changing your diet can change your gut bacteria – quite rapidly. No one knows the long-term effects of that on your health (and weight).

LOW-FODMAP FOOD TIPS

The good carbs in the following tables are all part of a healthy, low FODMAP diet. We have included the fibre count to help you may sure you get your 30 grams a day.

FRUIT	Per 100 grams			
	GI	Available CARBS	GL	Fibre
Blueberries	53	11g	6	1.8g
Bananas	52	20g	10	2.4g
Grapes	53	16g	8	2.7g
Grapefruit	25	5g	1	1.7g
Honeydew melon	•	6g	•	1g
Kiwifruit	53	9g	5	4.2g
Oranges	42	9g	4	2.6g
Papaya (pawpaw)	56	7g	4	2.3g
Pineapple	59	11g	6	1.8g
Rockmelon (cantaloupe)	68	5g	3	1g
Strawberries	40	4g	1.5	2.5g

Vegetables	Per 100 grams			
	GI	Available CARBS	GL	Fibre
Broccoli – cooked	•	0.5g	•	2.5g
Carrots – raw	39	7g	8	4g
Capsicums (peppers), green – raw	•	3g	•	2g
Capsicums, (peppers), red – raw	•	5g	•	1.8g
Eggplant (aubergine)	•	2.6g		2.3g
Parsnip – cooked	52	10g	5	3.6g
Potatoes, Carisma lower GI – cooked	56	12g	7	2.5g
Pumpkin – peeled and cooked	66	7g	5	1.9g
Swedes (rutabaga) – cooked	72	4g	3	2.2g
Sweet potato (orange fleshed) – cooked	61	15g	9	3.2g
Sweet potato (purple skinned/white fleshed) – cooked	75	14g	11	2.5g
Taro	54	25g	14	3.5g
Turnip	•	3 g	•	2.7g
Tomatoes – raw	•	2g	•	1.2g
Winter squash (butternut pumpkin) – cooked	51	7g	3	1.9g



Yam, peeled and boiled	54	25g	14	4.1g
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Make sure you eat plenty of green veg such as alfalfa, bamboo shoots, bean shoots, bok choy, broccoli, celery, choy sum, cucumber, green beans, lettuce (butter, iceberg), silverbeet (Swiss chard), spinach, spring onion (green part only) and zucchini (courgettes).

GRAIN FOODS	Per 100 grams			
	GI	Available CARBS	GL	Fibre
Amaranth (dry)	•	65g	•	6.7g
Buckwheat groats (cooked)	45	19g	8	1g
Millet (boiled)	71	23g	16	1.2g
Oats, steel cut (porridge made with water)	52	10g	9	1.8g
Oats, regular (porridge made with water)	58	8g	5	1.8g
Quinoa (boiled)	53	15g	8	2g
Rice, basmati, white (cooked)*	58	21g	12	0.5g

*Note that the GI of rice can range from low (47) to very high (98) depending on variety. Check the database at www.glycemicindex.com.

IN THE GI NEWS KITCHEN THIS MONTH

Low FODMAP fare including Strawberry and Banana French Toast and Gazpacho and Kate Hemphill’s Crusted Beef with Green Chilli Rice in her regular Sticks, Seeds, Pods and Leaves column.

LOW FODMAP FARE

A regular reader asked us for low FODMAP fare, so we dug into our archives and found some tasty options from books we published over the years with Hachette Australia, a publisher who has always been extraordinarily generous in allowing us to reproduce recipes from the GI books in *GI News*. So, thank you very much Hachette and especially publishing director, Fiona Hazard.

STRAWBERRY AND BANANA FRENCH TOAST

This recipe, one of Anneka Manning’s recipes from *The Low GI Family Cookbook*, was a staple on busy mornings she says – a healthy choice to whip up in an instant. Use butter if you prefer. Note that if you use a gluten-free bread, the GI is more likely to be moderate not low. Preparation time: 5 mins • Cooking time: 4 mins • Serves 2

- 1 egg
- 1 tablespoon milk
- ½ teaspoon vanilla essence
- 2 slices grainy low GI or gluten-free bread, halved
- 1 teaspoon olive or canola oil margarine

Strawberry and banana topping

- 125g (4½oz) strawberries, hulled and halved
- 1 banana, sliced





2 teaspoons pure maple syrup

For the topping, combine all the ingredients in a small bowl. • For the French toast, whisk together the egg, milk and vanilla in a shallow bowl with a fork. • Heat a large non-stick frying pan over medium heat. Rub the margarine over the base of the pan. Dip the bread slices in the egg mixture, allowing the bread to soak it up. Remove the bread, allowing any excess egg mixture to drain off. When the margarine is sizzling, add the dipped bread to the pan and cook for 2 minutes each side or until well browned. • Serve immediately with topping.

Per serve

970 kJ/ 320 calories; 9g protein; 7.5g fat (includes 1.5g saturated fat; saturated : unsaturated fat ratio 0.25); 30g available carbs (includes 14g sugars and 16g starch); 5.5g fibre; 220mg sodium; 420mg potassium; sodium : potassium ratio 0.52

GAZPACHO

This light meal from the *Low GI Vegetarian Cookbook* can be low FODMAP if that's what you need as the garlic is optional (but a smidgeon isn't usually a problem). Don't worry, however, there's plenty of fresh flavour in the herbs. Slurp it up, then mop up the rest with some grainy (or gluten-free) bread. Preparation time: 15 minutes • Chilling time: 4 hours • Serves 6

3 slices sourdough or gluten-free bread soaked in ½ cup water for 10 minutes then drained and squeezed a little to remove excess water

1kg (2lb 4oz) very ripe vine-ripened tomatoes, chopped

1 long green chilli, seeded and chopped

2 Lebanese cucumbers, chopped

1 large red capsicum (pepper), seeded and chopped

2 cloves garlic, peeled (optional)

1 cup basil leaves

1 cup flat-leaf parsley leaves

2 tablespoons extra virgin olive oil

2 tablespoons balsamic vinegar

1 tablespoon caster sugar

1½ cups water

salt and freshly ground black pepper



To serve

Extra finely chopped cucumber and capsicum

Ice cubes

Place the bread, tomatoes, chilli, cucumber, capsicum, garlic (if using), basil, parsley, oil, vinegar and sugar in a large food processor. Process until well combined. Add enough water until you get the desired pouring consistency. Transfer to a bowl or airtight container. Taste and season well with salt and pepper. Refrigerate for 4 hours or until well chilled. • Serve with a few ice cubes in the soups bowls and extra chopped cucumber and capsicum for people to help themselves.

Per serve

740kJ/ 175 calories; 5.5g protein; 7g fat (includes 1g saturated fat; saturated : unsaturated fat ratio 0.2); 20g available carbs (includes 12g sugars and 8g starch); 6g fibre; 150 mg sodium; 755 mg potassium; sodium : potassium ratio 0.2



STICKS, SEEDS, PODS AND LEAVES

Kate Hemphill's light and easy everyday fare with culinary spices and herbs. Kate absorbed an intimate knowledge of all aspects of herbs and spices from her parents and grandparents. She is a trained chef who has worked as a recipe writer and cookery teacher. She contributed the recipes to Ian Hemphill's best-selling *Spice and Herb Bible* and you will find more of her recipes on the Herbies Spices website: www.herbies.com.au

CRUSTED BEEF WITH GREEN CHILLI RICE

This tasty, quick (under an hour) and easy dinner is given a fresh chilli flavour boost with a green chilli powder spice mix in the rice. Simply serve with a crispy salad on the side. The beef is coated in Herbie's all-time favourite crusting mix (coriander seed, paprika, brown mustard seed, sumac, salt, ginger, sugar, oregano, pepper, allspice). Substitute your favourite spice brands if you wish. Prep time: 10 mins • Cook time: 40 mins • Serves: 4

½ beef fillet (approx 500g/1lb 2oz)
3 tbs (45ml) [Herbie's Crusting Mix](#)

For the rice

½ red onion, finely diced
3 tsp olive oil
2 cloves garlic, crushed
1 cup basmati rice
1 tsp [Herbie's Green Chilli Powder](#)
2 cups water
½ bunch fresh coriander, roughly chopped
2 portions of frozen spinach



Press the crusting mix around the fillet and leave covered at room temperature (this helps with cooking) while preparing rice. • Saute onion in olive oil for 3–4 minutes until soft, then add garlic for 1 minute. Stir in rice and chilli powder until well coated, then add water, cover with a lid and reduce to a simmer. • Stir occasionally until cooked and liquid absorbed (about 15 minutes). Stir through coriander and spinach and season to taste. • Heat a barbecue or griddle to medium-high then sear beef for 4 minutes each side for medium rare (will also depend on thickness). Allow to rest for 5 minutes before slicing.

Per serve

Energy: 1335 kJ/320 cal; protein: 31g; fat: 11.5g; saturated fat: 3.7g (saturated : unsaturated fat ratio 0.47); available carbohydrate 20g; fibre: 5g; 140mg sodium; 700mg potassium (sodium : potassium ratio 0.2)

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