



July 2018

GI News is published by the University of Sydney, School of Life and Environmental Sciences and the Charles Perkins Centre. Our goal is to help people choose the high-quality carbs that are digested at a rate that our bodies can comfortably accommodate and to share the latest scientific findings on food and diet with a particular focus on carbohydrates, dietary fibres, blood glucose and the glycemic index.

Publisher: Professor Jennie Brand-Miller, AM, PhD, FAIFST, FNSA

Editor: Philippa Sandall

Scientific Editor/Managing Editor: Alan Barclay, PhD, APD

Social Media: Natasha Williams

Contact: ginewsfeedback@gmail.com

Join us on: 

Sydney University Glycemic Index Research Service

Manager: Fiona Atkinson, PhD, APD

Contact: sugirs.manager@sydney.edu.au

FOOD FOR THOUGHT

BACK TO THE FUTURE

Researchers from Oxford University and the Swiss agricultural research institute, Agroscope, report that the same food can have very different environmental impacts – the best growing practices achieved the same yield with about a third of the impact. For instance, the worst 10 per cent of beef production produces 12 times more greenhouse gas and requires 50 times more land to produce 100 grams of protein, compared to the best 10 per cent of beef production. The trend was the same among the major crops — wheat, maize, and rice.

The idea behind the study was to help inform food producers and consumers on better ways to reduce their environmental impact. To do this they created a comprehensive database on the environmental impacts of nearly 40,000 farms, and 1,600 processors, packaging types, and retailers for 40 major foods.

But the inescapable trend was that even the best managed livestock can't produce the equivalent amount of protein as the worst managed vegetable crop, without causing a bigger environmental impact and why they conclude animal product-free diets are likely to deliver greater environmental benefits than changing production practices both today and in the future. Hence "Would you go vegan to save the planet?" headlines.

There's no question in our minds here at GI News that making better choices about the food we eat – where it has come from, how it is grown and how animals are farmed – matters.

The researchers focused on environmental impacts. Not human health impacts. We are big fans of plant-based diets built around the foods the natural world has provided for us – good, wholesome carbs including fruits, vegetables, beans, peas, lentils, seeds, nuts, and grains. These foods and the traditional staples we make from them are both sustaining and sustainable.

In fact, you only have to look around the world to see that plant-based dietary patterns such as the traditional Mediterranean and Japanese diets are associated with good health and long life. The “Blue Zones” story is the same. In these communities where people are ten times more likely to be living a healthy, active life until they are 100 than the rest of us, author and researcher, Dan Buettner reports they:

- eat food, not too much, mostly plants
- are active every day
- get plenty of sleep
- are not stressed out, and
- have strong social connections.

He also found that their diets are as noteworthy for their diversity as for what they share. In Loma Linda, California, they are vegans. In Costa Rica, their diet includes eggs, dairy, and meat. In Ikaria, Greece, and Sardinia, Italy, they practice variations on the theme of Mediterranean diets. In Okinawa, Japan, a traditional plant-based, rice-centric diet produces the same outstanding results.

After infancy, we have considerable flexibility in our food choices because we are omnivores. We evolved to be adaptable. We are not “One Diet Fits All” people and we don’t think the only choice we have to deliver environmental benefits is ditching animal products. But we do think it’s back to the future time where we feel good about the food we produce, buy, cook and eat and we enjoy the pleasure it brings each day with family and friends. Our goal here at *GI News* is to help people simplify their lives and choose the sustaining and sustainable good wholesome carbs that are digested at a rate that our bodies can comfortably accommodate. That’s why we wrote *The Good Carbs Cookbook* where we list the 10 reasons why we love them.

1. We love the way they power the brain.
2. We love the way they fuel the muscles.
3. We love the energy they give.
4. We love the good stuff (vitamins and minerals) that comes with them.
5. We love their keep-it-regular fibre habit.
6. We love preparing meals for family and friends with them.
7. We love the traditional foods they put on the plate.
8. We love the variety and pleasure they bring to the table.
9. We love the way they feed the world.
10. We love their lighter footprint on the planet.

Read more:

- [Research reveals how the same foods create markedly different environmental impacts and outlines a new approach to reduce them](#)
- [The Good Carbs Cookbook](#)
- [Prof Clare Collins, Love meat too much to be vegetarian? Go 'flexitarian'](#)
- [Catherine Saxelby's Complete Food and Nutrition Companion, Vegetarian and Vegan Diets, pp326–8](#)

WHAT'S NEW?

SUPPLEMENTS MAY DO MORE HARM THAN GOOD

The most commonly consumed vitamin and mineral supplements provide no consistent health benefit or harm, suggests a new study published in the *Journal of the American College of Cardiology* led by researchers at St. Michael's Hospital and the University of Toronto.

“We were surprised to find so few positive effects of the most common supplements that people consume,” said Dr. David Jenkins, the study's lead author. “Our review found that if you want to use multivitamins, vitamin D, calcium or vitamin C, it does no harm - but there is no apparent advantage either.”

The study found folic acid alone and B-vitamins with folic acid may reduce cardiovascular disease and stroke. Meanwhile, niacin and antioxidants showed a very small effect that might signify an increased risk of death from any cause.

“These findings suggest that people should be conscious of the supplements they're taking and ensure they're applicable to the specific vitamin or mineral deficiencies they have been advised of by their healthcare provider,” Dr. Jenkins said. “In the absence of significant positive data - apart from folic acid's potential reduction in the risk of stroke and heart disease – it's most beneficial to rely on a healthy diet to get your fill of vitamins and minerals.”

Writing in *The Conversation*, Prof Clare Collins says: “Most people in Western countries don't have an optimal diet. This review shows taking supplements as an “insurance policy” against poor dietary habits does not work. If it did, there would have been a reduction in early death ... The bottom line is we need to eat more nutrient-rich whole foods, including foods high in folate such as green leafy vegetables, legumes, seeds, poultry, eggs, cereals and citrus fruits. Many breads and breakfast cereals in Australia are fortified with folate. Good food sources of niacin (vitamin B3) are lean meats, milk, eggs, wholegrain breads and cereals, nuts, leafy green vegetables and protein-containing foods.”

Read more:

- [Supplemental Vitamins and Minerals for CVD Prevention and Treatment](#)
- [Prof Clare Collins: New Vitamin supplement study find they may do more harm than good](#)

THE VEG ADVANTAGE

Over the past twenty years, Dr Neal Barnard has undertaken a number of studies looking specifically at the benefits of vegetarian and vegan diets for people with type 2 diabetes. “A plant-based diet is the preferred approach to type 2 diabetes,” he says. “It is easy, effective, and all the ‘side-effects’ are good ones—weight loss, better blood pressure and cholesterol, and less need for medications.”

In a 74-week randomised trial, 99 adults with type 2 diabetes were placed on either a vegan diet or the 2003 American Diabetes Association (ADA) diet guidelines, which emphasised limiting calories and controlling carbohydrates. The vegan diet proved better at controlling BGLs and cholesterol. After an additional year of observation, the vegan group still had an edge when it came to controlling blood glucose and cholesterol.

A 10-city study conducted at GEICO plants around the US again showed that a vegan diet can improve body weight and blood glucose control. The researchers found that it is also promising for people with advanced diabetes. A randomised controlled pilot study showed that a low-fat vegan diet led to substantial improvements in painful diabetic neuropathy.

Research scientists know that adhering to all therapeutic diets requires some effort by the participants. Dr Barnard’s team has specifically monitored the acceptance of the vegan diet and reports that it appears to be no more challenging than other prescribed diets for people with type 2 diabetes.

In a 2014 systematic review and meta-analysis of 255 people (average age 42.5 years) followed for an average of 24 weeks (range 4–74 weeks) his team found that vegetarian diets were associated with improved glycemic control in people with type 2 diabetes – a significant 0.39% reduction in HbA1c.

Read more:

- [74-week randomised trial](#)
- [10-city study](#)
- [Randomised controlled pilot study](#)
- [Acceptance of the vegan diet](#)
- [Systematic review and meta-analysis](#)

LOWER-FAT DIET AND BREAST CANCER

Of the 1764 women diagnosed with breast cancer during the Women's Health Initiative Dietary Modification trial, those following a lower-fat diet had increased breast cancer overall survival, although the increase was likely partly due to better survival from several causes of death. In the trial, 19,541 women followed a dietary intervention to reduce their fat intake to 20 percent of calories and increase the amount of fruits, vegetables and grains they were eating, while 29,294 women served as a usual-diet comparison group.

Read more:

- [Association of Low-Fat Dietary Pattern With Breast Cancer Overall Survival: A Secondary Analysis of the Women's Health Initiative Randomized Clinical Trial](#)

CUT BACK SAT FAT TO REDUCE DIABETES RISK

Nonalcoholic fatty liver disease is a risk factor for type 2 diabetes and cardiovascular disease. In this small and short-term overfeeding study, the researchers gave overweight people an extra 1000 calories a day from saturated fat, unsaturated fat and carbohydrates (simple sugars). They found that where the extra calories came from made a difference to increases in IHTG (intrahepatic triglyceride). Saturated fat induced greatest increase in IHTG, insulin resistance, and harmful ceramides. They suggest that decreased intakes of saturated fat could be beneficial in reducing IHTG and the associated risk of diabetes.

Read more:

- [Saturated Fat Is More Metabolically Harmful for the Human Liver Than Unsaturated Fat or Simple Sugars](#)

TWO RELIABLE REFERENCES

[Catherine Saxelby's Complete Food and Nutrition Companion \(second edition\)](#) A leading nutritionist for over 25 years, Catherine has educated a generation of Australians about healthy eating and getting the most from their diet. This A–Z guide is a practical family nutrition reference with more than 500 entries covering whole foods, processed foods, additives, nutrients, supplements and more.

[Understanding the Science of Food from Molecules to Mouthfeel.](#) Sharon Croxford and Emma Stirling wrote this as a food science text book. But anyone interested in food science will enjoy it. They describe the key processes in food preparation and the chemistry behind them in detail including denaturation and coagulation of proteins, gelatinisation, gelation and retrogradation of starches, thickening and gelling, browning reactions, emulsification, foams and spherification, chemical, mechanical and biological leaveners and fermentation and preservation. They also cover the science behind cooking techniques and the senses.

PERSPECTIVES: DR ALAN BARCLAY

PROTEIN POWER

Protein is one of the more popular and positive nutrition buzzwords today, with a myriad packaged processed foods declaring that they are high in protein. But what exactly is protein, what are the best sources, how much are we consuming, and do we really need those protein balls and shakes?

Proteins are chemical compounds made up chains of amino acids which themselves are composed of the elements carbon, hydrogen, oxygen and nitrogen. There are 20 amino acids that are important to humans, and nine (histidine, isoleucine, leucine, lysine, methionine, phenylalanine, threonine, tryptophan, and valine) of these are considered essential in that they must be obtained from foods and drinks in our diets, whereas the other non-essential amino acids can be synthesised within our bodies. Amazingly, all of the proteins in our body are made from these 20 amino acids.

Proteins are essential parts of the structure and function of every cell in our body and the body of an average 80kg adult will contain about 13g of protein, with 43% found in muscle, 16% in blood and 15% in skin. The protein in our cells are constantly turning over, over a period of minutes to months, through the process of protein synthesis and degradation, which is one reason why we ideally need to obtain a range of proteins from foods and drinks

each day. In addition to being used to make proteins, amino acids can be used for specific purposes within cells, like the formation of nerve transmitters and hormones. Amino acids also can be used as a source of energy – particularly when other sources of energy like carbohydrate and fat are restricted.

In the great scheme of things, our body's top priority is to meet its energy requirements, and when energy from other sources is limited, it will break down protein to meet its needs. It does this by stripping off the nitrogen from the rest of the amino acid molecule, leaving carbon, oxygen and hydrogen skeletons to be used as fuels, just like carbohydrate, and provides 17 kJ per gram of protein. On the other hand, if you consume adequate carbohydrate and fat, your body spares protein from being used for energy. When amino acids are used for energy, the nitrogen molecules are converted to urea and excreted in your urine.

Most people eat a variety of foods containing many different proteins. Some foods contain all 9 essential amino acids in amounts suitable for humans and these are called complete protein foods. Commonly eaten foods that are complete proteins include animal foods like meat, poultry, seafood, eggs, and dairy foods and in addition, soy protein is considered to be complete. Proteins in plant foods (vegetables, grains, legumes, nuts and seeds) are rarely complete, but when they are eaten in combination, either at the same meal (e.g., rice and beans, or bread and peanut butter), or another time of the day, you nearly always end up with a complete source of protein, which is one of the reasons why vegan diets (where you do not eat any animal foods) can meet all of our nutritional requirements if well designed.

Unfortunately, most people don't realise that both low and high protein intakes are detrimental to health. Low intakes can impair the functioning of our immune systems, making us more prone to infections, and of course will stunt the growth of children and adolescents, and slow the healing of wounds and rates of recovery after surgery, for example. It is also possible to eat too much protein as our kidneys don't have an unlimited capacity to remove urea from our blood. The upper limit of protein consumption in humans is estimated to be 35% of energy from protein, which for a typical person consuming 8,700 kJ (2080 Calories) a day would be 179 grams a day. Needless to say, this rarely occurs under normal circumstances, but has been observed in populations where food is scarce, and people are forced to rely heavily on eating wild animals like rabbits for food, and that's why it is known as rabbit starvation or mal de caribou. Symptoms include diarrhoea, headache, fatigue, low blood pressure and slow heart rate, and a vague discomfort and hunger that can only be satisfied by consuming foods that are high in fats or carbohydrates.

The Estimated Average Requirement (the daily nutrient level estimated to meet the requirements of half the healthy population) for protein for men is 0.68g per kg body weight per day and for women it is 0.60g per kg body weight per day. Australia's most recent nutrition survey (part of the Australian Health Survey, or AHS) in 2011/12 determined that men consumed an average of 104.6 g of protein per day or 1.2 g per kg body weight and women consumed 77.9g of protein per day or 1.1g per kg body weight. In other words, the average Australian adult consumes nearly twice as much protein as the estimated average requirement each day.

Perhaps unsurprisingly, Australians have increased the amount of protein they consumed each day since the last national nutrition survey in 1995 – as low-carbohydrate diets have become more fashionable, people have replaced some of the carbohydrate with protein. The primary sources of high quality protein in the Australian diet are lean meats, poultry, seafood, eggs and alternatives (e.g., soy-based products, other legumes, nuts and seeds, etc...) and milk, yoghurt, cheese and alternatives. The AHS found that only 17% (less than 1 in 5) of Australian adults consumed the recommended number of serves of meats and alternatives and less than 14% (around 1 in 7) consumed the recommended number of serves of milk, yoghurt, cheese and alternatives. Legumes are also a good source of protein, but again, less than 10% of Australians consume the recommended number of serves. Overall, these results suggest that most of the extra protein Australian adults are consuming is coming from discretionary foods. This may be highly refined protein devoid of other nutrients – or in other words “junk” protein.

In Australia at least, we should beware the high protein health halo – we don’t need to eat more processed foods high in refined proteins. We should instead be eating more of those high-quality protein-containing foods like lean meats, poultry, seafood, dairy and alternatives that generally don’t make protein claims on their packaging.

Read more:

- This edited extract is based on text from Dr Alan Barclay’s book [Reversing Diabetes](#)
- Australian Health Survey – [Protein](#)



Alan Barclay PhD is a consultant [dietitian](#) and chef ([Cert III](#)). He is author of *Reversing Diabetes* (Murdoch Books), and co-author of 30-plus scientific publications, *The Good Carbs Cookbook* (Murdoch Books), *Managing Type 2 Diabetes* (Hachette Australia) and *The Ultimate Guide to Sugars and Sweeteners* (The Experiment Publishing). Follow him on [Twitter](#) or check out his [website](#).

KEEPING IT GREEN – EATING FOR BODY AND PLANET

PLASTIC-FREE JULY

Grocery shoppers in Montreal recently made headlines ditching excessive plastic packaging at the door of their supermarket in protest. Dutch supermarket chain *Ekoplaza* introduced a plastic-free aisle. Australian supermarket giants *Coles* and *Woolworths* will stop offering single-use plastic bags this month. Chile has boldly approved a *nation-wide* ban on single-use plastic bags. The anti-plastic movement is growing. We now have a whole month to focus, laser-like, on our own habits: [plastic-free July](#).

The plastic-free challenge In preparation for ‘Plastic-Free July’ and to share our experiences with you, we decided to take the plunge and ditch single use plastic for a month. Did we succeed? Not entirely. Plastic is so omni-present as to be nearly impossible to avoid. Some swaps were simple; others not so much. It’s really about a shift in mindset and planning. It’s not easy going plastic free, but neither is a dying planet. Here’s what we did.

To avoid plastic shampoo bottles, we resorted to bar soap instead that left us with scarecrow hair. We are still looking for cosmetics in plastic-free or reusable packaging, and instead have settled for recyclable packaging rather than go completely native. Unwell with a cold? Try seeking relief for a sore throat with lozenges that don't come in plastic-foil blister packs – impossible. We'd suggest sipping home-made lemon juice and honey and taking it with you in a small re-usable glass jar. Need a nice hot cup of tea or coffee to warm up from the inside? Most tea and coffee come in plastic packaging and take-away cups are lined with plastic making them near impossible to recycle. The best we could do is buy loose-leaf tea and coffee in larger amounts to reduce packaging or take our own re-usable containers to a bulk-produce store. And of course, say no to take away coffee cups and take our own. Grabbing some food on-the-go? It's a disposable plastic nightmare that made us think twice about doing it at all or search hard for restaurants that use real cutlery and crockery. If you'd like to try 'Plastic-Free July' we've got the following tips to help you avoid single-use plastics.

Plastic-free hacks on-the-move

Keep these eco-friendly alternatives in your bag and say "no thanks" to disposable plastics:

- **Metal spork:** An easy (and less flimsy) alternative to disposable plastic cutlery.
- **Reusable coffee cup:** Some cafes even offer discounts if you BYO reusable cup!
- **Metal drinking straw:** Ditch plastic straws that harm marine life in favour of reusable metal straws.
- **Glass storage container:** Useful for bringing lunch to work or taking leftovers home from restaurants.
- **Cloth bag:** For those unplanned trips to the grocery store.
- **Choose full eat-in** restaurants with proper crockery and cutlery, or seek out take-aways with biodegradable packaging
- **Avoid disposable plates, cutlery and cups for parties and picnics.** Use re-usable or biodegradable.

Plastic-free food shopping hacks

- **Buy large** quantities and decant them into smaller reusable containers, rather than buying single serves.
- **Reusable produce sacks/bags:** are handy for bringing smaller fruits and veggies like cherries or green beans to the checkout to be weighed.
- **Make your own:** bread, yoghurt and snacks to save packaging (and money)
- **Shop local:** farmers market, butcher, baker or greengrocer to reduce packaging
- **Ditch plastic food wrap:** re-usable wraps are available or use washable containers instead.

Plastic-free bathroom hacks

- **Metal safety razor:** Not only do metal razors look great on your vanity; you can also change the blades and re-use the metal razor for a lifetime. The blades are cheap as chips and give you a really close shave!
- **Face cloth:** An alternative to facial scrubs with plastic micro beads and make-up wipes. Keep them fresh by them drying them out after each use, ideally in the sun (have two on the go and alternate)

- **Bar of soap:** The humble but effective alternative to plastic bottles of body wash.
- **Olive oil or coconut oil:** Use a few drops as a moisturiser or anti-frizz serum for unruly hair.
- **Bamboo toothbrush:** A compostable alternative to plastic toothbrushes.
- **Arrowroot powder:** A package-free (and cheaper!) alternative to dry shampoo for those with oily hair.
- **Female hygiene:** ladies, join the army of enviro-crusaders ditching disposable feminine hygiene products and try re-usable menstrual cups and underwear (saves money and avoids waste in landfill).

Read more:

- [Richard Cornish: My week without plastic in the kitchen](#)

Thanks to Rachel Ananin aka TheSeasonalDietitian.com for her assistance with this article.



In this series we explore how you can reduce your ecological impact through your food choices. We'll help you do your bit for the environment, one mouthful at a time.

Nicole Senior is an Accredited Nutritionist, author, consultant, cook, food enthusiast and mother who strives to make sense of nutrition science and delights in making healthy food delicious.

Contact: You can follow her on [Twitter](#), [Facebook](#), [Pinterest](#), [Instagram](#) or check out her [website](#).

GOOD CARBS FOOD FACTS A TO Z

BROWN RICE

Grains are at their most nourishing when we eat them as whole as possible or as minimally processed staples. They certainly figure prominently in the diets of the long-living Blue Zones folks and observational studies around the world (think of these as head counts) suggest that eating plenty of whole grains may reduce the risk of developing certain types of cancer, heart disease and type 2 diabetes. That's why health professionals tend to worship at the altar of wholegrains and "consume more whole grains" is enshrined in dietary guidelines around the globe.

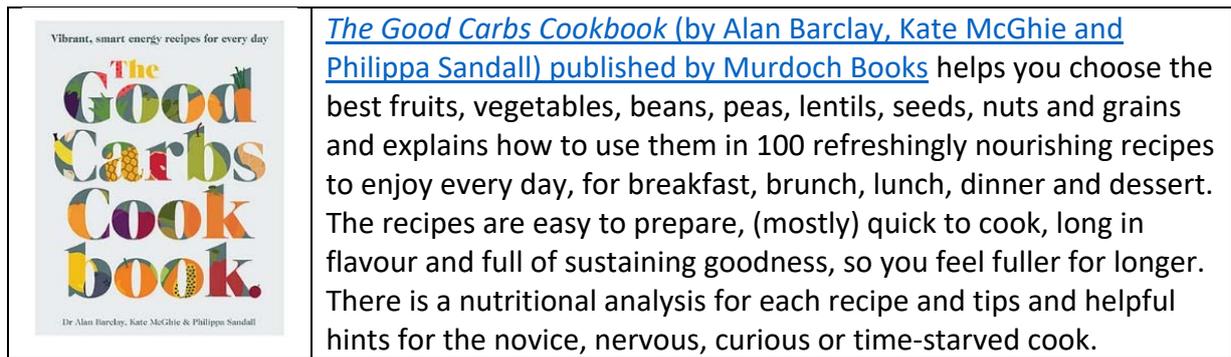
Nutty tasting brown rice with just the inedible hull removed is the rice with whole grain credentials (it's a good source of niacin and magnesium) and there are now 2-minute microwave options to help you get a meal on the table fast. Look for lower GI varieties (check out the database at www.glycemicindex.com) and store in a cool, dry place in a resealable packet or airtight container. Remember to keep portions moderate, because even when you choose a low GI rice, eating too much can have a marked effect on your blood glucose.

We think all whole foods that are core foods (minimally processed fruits, vegetables, legumes, nuts and seeds) should be assigned five stars. Australia's health star rating system (like traffic lights elsewhere) however, was designed for processed packaged foods not core foods like brown rice. The ratings system is currently being reviewed to see what needs to be done to align it better with existing dietary guidelines.

Good Carbs Food Facts	
Brown rice	
★ ★ ★ ½	
Glycemic index 51	
Gluten free	
Serving size – Half a cup (about 90g or 3oz) cooked brown rice	
Kilojoules	468
Calories	112
Protein	2.5g
Fats – Total	0.9g
Includes:	0.3g
--Saturated fat	0.3g
–Unsaturated fat	0.3g
–Cholesterol	
Saturated : unsaturated fat ratio	0.5
Carbohydrates – Total	24g
<i>Available</i>	22.5g
Includes:	
--Natural sugars	0g
–Natural starches	22.5g
–Added sugars	0g
–Added starches	0g
<i>Unavailable</i>	
Includes:	
–Dietary fibre	1.5g
Sodium	4mg
Potassium	77mg
Sodium : potassium ratio	0.05
Glycemic load	11
Diabetes exchange	1
Ingredients: Brown rice	

Source: [The Good Carbs Cookbook](#)

IN THE GI NEWS KITCHEN
THE GOOD CARBS COOKBOOK



WILD AND BROWN RICE PILAF WITH MUSHROOMS AND ALMONDS

A sensational combination of nutty chewy brown rice, and equally toothsome, nutty wild rice – the wild card in this pilaf. Mix the mushroom varieties to intensify flavour. Choose several mushroom varieties to intensify flavor and deliver a complex, deep, earthy mushroom taste: brown mushrooms provide dense texture and robust flavour; delicate buttons; slightly spongy aromatic shitake; or shell-shaped succulent oyster mushrooms. Instead of buttons, consider cremini, which are firm and earthy, with a little more oomph.

Preparation time: 20 minutes

Cooking time: 1¼ hours

Serves: 8

- 2 tablespoons olive oil
- 1 tablespoon butter
- 1 small onion, very finely chopped
- 1 small carrot, scraped, finely chopped
- 1 small stick of celery, finely chopped
- 2 garlic cloves, crushed
- 3 cups sliced mushrooms
- Salt flakes and freshly ground pepper
- 1 cup brown rice
- 1 cup wild rice
- 4 cups chicken stock
- 2 teaspoon lemon zest from the zest of 1 lemon
- 1 tablespoon lemon juice
- 2 tablespoons freshly chopped parsley
- ½ cup coarsely chopped raw almonds

Put the oil and butter in a large sturdy pot with a close fitting lid. Add the onion, carrot, celery and garlic and gently cook for 5 minutes or until the vegetables soften. Add the mushrooms, increase the heat to medium and cook and stir 5 minutes. Rinse the wild and brown rice, drain well and add to the pot. Stir until the grains are well coated with vegetable and oil mixture. Pour in the stock, (vegetable stock can replace chicken stock), bring to a boil and then reduce the heat to as low as you can. Put the lid on the pot (if it is not tightly fitting, cover the pot with foil and then ram the lid on) and cook for 50 minutes. It is important that you do not lift the lid during this time. • Remove the pot from the heat and lift the lid. Taste the rice—it should be al dente. If not, re-cover the pot and cook for another 10 minutes. The rice should not appear wet and must have a slight crunch. Add

salt and pepper to taste with the lemon zest and juice. Replace the lid, remove from the heat and let the rice rest for 10 minutes. Add the parsley and almonds and fluff with a fork.

Per serve

1045kJ/250 calories; 8g protein; 13g fat (includes 2.5g saturated fat; saturated : unsaturated fat ratio 0.23); 22g available carbs (includes 2g sugars and 20g starches); 4g fibre; 370mg sodium; 390mg potassium; sodium : potassium ratio 0.96

COPYRIGHT AND PERMISSION

This website and all information, data, documents, pages and images it contains is copyright under the Copyright Act 1968 (Commonwealth of Australia) (as amended) and the copyright laws of all member countries of the Berne Union and the Universal Copyright Convention. Copyright in the website and in material prepared by GI News is owned by University of Sydney, School of Life and Environmental Sciences and the Charles Perkins Centre. Copyright in quotations, images from published works and photo libraries, and materials contributed by third parties including our regular contributors Alan Barclay, Jennie Brand-Miller, Nick Fuller, and Nicole Senior is owned by the respective authors or agencies, as credited.

GI News encourages the availability, dissemination and exchange of public information. You may include a link to GI News on your website. You may also copy, distribute, display, download and otherwise freely deal only with material owned by GI News, on the condition that you include the copyright notice “© GI News, University of Sydney, School of Life and Environmental Sciences and the Charles Perkins Centre” on all uses and prominently credit the source as being GI News and include a link back to www.gisymbol.com/gi-news. You must, however, obtain permission from GI News if you wish to do the following: charge others for access to the work; include all or part of the work in advertising or a product for sale, or; modify the work. To obtain such permission, please contact ginewsfeedback@gmail.com. This permission does not extend to material contributed and owned by other parties. We strongly recommend that you refer to the copyright statements at their respective websites and seek their permission before making use of any such material, whether images or text. Please contact GI News if you are in doubt as to the ownership of any material.

DISCLAIMER GI News endeavours to check the veracity of news stories cited in this free e-newsletter by referring to the primary source, but cannot be held responsible for inaccuracies in the articles so published. GI News provides links to other World Wide Web sites as a convenience to users, but cannot be held responsible for the content or availability of these sites. All recipes that are included within GI News have been analysed however they have not been tested for their glycemic index properties by an accredited laboratory according to the ISO standards.

© [®]™ The University of Sydney, Australia.