What is fibre?

Dietary fibre is found in wholegrain cereals and fruit and vegetables. Fibre is made up of the indigestible parts or compounds of plants, which pass relatively unchanged through our stomach and intestines. Fibre is mainly a carbohydrate. The main role of fibre is to keep the digestive system healthy.

Other terms for dietary fibre include ‘bulk’ and ‘roughage’, which can be misleading since some forms of fibre are water-soluble and aren’t bulky or rough at all.

Conditions linked to low-fibre diets

In countries with traditionally high-fibre diets, diseases (such as bowel cancer, diabetes and heart disease) are much less common than in Western countries.

Research shows that many Australians are not getting enough dietary fibre. A diet low in fibre has been linked to:

- constipation
- haemorrhoids
- diverticulitis
- irritable bowel syndrome (IBS)
- overweight and obesity
- heart disease
- diabetes
- bowel cancer
- breast cancer.

Fiber

The final type of carbohydrate is fiber. Our bodies don’t have the enzymes needed to break fiber down into smaller units for absorption. This means fiber cannot be used for energy. There are two categories of fibre – soluble and insoluble. Both are beneficial and we need to include them in our daily diets. Most plant foods contain a mixture of both.

Insoluble Fiber (or roughage)

• Doesn’t dissolve in water, but it does absorb water.

• Creating bulkier, softer stool makes it easier for your small intestine and colon to push waste through.

• This extra bulk reduces constipation and may help prevent diseases, such as colorectal cancer.

• Whole-wheat flour, wheat bran, nuts and many vegetables are good sources of insoluble fiber.

This slowing down effect of the digestive system is usually overridden by insoluble fibre. It does not absorb water and speeds up the time that food passes through the gut.

Insoluble fibre includes cellulose, hemicelluloses and lignin, which make up the structural parts of plant cell walls.

A major role of insoluble fibre is to add bulk to faeces and to prevent constipation and associated problems (such as haemorrhoids).

Good sources of insoluble fibre include:

- bran – wheat bran, corn bran, rice bran
- the skins of fruits and vegetables
- nuts and seeds
- dried beans
- wholegrain foods.

Soluble Fiber

• Soluble fiber dissolves in water to form a gel-like, gummy material

• It can help lower blood cholesterol and glucose levels.

Soluble fibre soaks up water like a sponge and helps to bulk out our poo (faeces) so it can pass through the gut more easily. It acts to slow down the rate of digestion.

Soluble fibre includes pectins, gums and mucilage, which are found mainly in plant cells.

One of its major roles is to lower LDL (bad) cholesterol levels. It can also help with constipation.

Good sources of soluble fibre include:

- fruit and vegetables
- oat bran, barley, seed husks, flaxseed, psyllium
- legumes – dried beans, lentils, peas
- soy milk and soy products.

HEALTH BENEFITS OF FIBER	
Problem	**Possible Health Benefit of Increasing Fiber Intake**
Constipation	Fiber holds water, which increases bulk of stool, producing softer stools and reducing constipation.
Hemorrhoids	Larger, softer stools reduce straining during bowel movements.
Diverticulosis	Larger, softer bowel movements maintain the health of the colon to prevent formation of tiny sacs that may become infected.
Obesity	Increased feeling of fullness from high-fiber food, resulting in less food eaten.
Heart Disease	Eating certain kinds of fiber reduces heart disease risk.
Colorectal Cancer	Large, soft stools may dilute carcinogens: faster time through colon reduces contact of carcinogen with intestinal wall.

Increasing Fiber Intake

• Not quite sure how to increase fiber in your diet? Use these strategies:

• Eat a variety of plant-based foods.

• Eat plenty of fruits and vegetables.

• Look for ‘bran’, ‘whole grain’, or ‘whole wheat flour’ on food labels.

• Choose whole grains for at least half of your grain.

• Eat beans and legumes often.

• Choose cereals with 5 or more grams of dietary fiber per serving.

• Eat brown rice rather than white rice.

• Leave the skins on your fruit and vegetables.

• Choose whole fruit over juice.

• Substitute higher fiber ingredients in cooking (such as adding bran or

oatmeal).

Health benefits of dietary fibre

The digestive system is lined with muscles that massage food along the digestive tract – from the moment a mouthful is swallowed until the eventual waste is passed out of the bowel (a process called peristalsis).

As dietary fibre is relatively indigestible, it adds bulk to our faeces (poo) and keeps the digestive system healthy.

It also important for other body functions (such as:

- lowering blood cholesterol
- keeping our weight under control
- stabilising glucose – which is important if you have diabetes
- reducing our risk of other conditions (such as heart disease and some cancers).

Dietary fibre and blood cholesterol

There is good evidence that soluble fibre reduces blood cholesterol levels.

When blood cholesterol levels are high, fatty streaks and plaques are deposited along the walls of arteries. This can make them dangerously narrow and lead to an increased risk of coronary heart disease (which includes angina and heart attack).

It is thought that soluble fibre lowers blood cholesterol by binding bile acids (which are made from cholesterol to digest dietary fats) and then excreting them.

Dietary fibre and weight control

A high-fibre diet is protective against weight gain. High-fibre foods tend to have a lower energy density, which means they provide fewer kilojoules per gram of food. As a result, a person on a high-fibre diet can consume the same amount of food, but with fewer kilojoules (calories).

Foods high in fibre are often bulky and, therefore, filling. Soluble fibre forms a gel that slows down the emptying of the stomach and the transit time of food through the digestive system. This extends the time a person feels full.

Fibre also delays the absorption of sugars from the intestines. This helps to maintain lower blood sugar levels and prevent a rapid rise in blood insulin levels, which has been linked with obesity and an increased risk of diabetes.

Dietary fibre and diabetes

If you have diabetes, eating a diet high in fibre slows glucose absorption from the small intestine into your blood. This reduces the possibility of a surge of insulin – the hormone produced by the pancreas to stabilise blood glucose levels.

Dietary fibre, cancer and heart disease

Increasing dietary fibre and wholegrain intake is likely to reduce the risk of cardiovascular disease, type 2 diabetes, weight gain and obesity, and increase your overall mortality.

It is also very likely that these observed health benefits occur indirectly, through the protective effects of 'phytochemicals' (such as antioxidants) that are closely associated with the fibre components of fruits, vegetables and cereal foods.

Fibre and bowel cancer risk

Studies have shown that dietary fibre, cereal fibre and wholegrains are protective against some forms of cancer. Fibre is thought to decrease bowel cancer risk by increasing stool bulk, diluting possible carcinogens present in the diet and decreasing transit time through the colon.

Also, bacterial fermentation of fibre leads to the production of short-chain fatty acids, which are thought to have protective effects.

Other research has found that a 10g per day intake of total dietary fibre equates to a 10% reduction in risk of colorectal cancer.

Fibre and breast cancer risk

One large-scale study also found that a higher fibre diet during adolescence and young adulthood may reduce women's breast cancer risk.

Dietary fibre and ageing

Fibre is even more important for older people. The digestive system slows down with age, so a high-fibre diet becomes even more important.

Don’t forget to drink lots of water

A high-fibre diet may not prevent or cure constipation unless you drink enough water every day.

Some very high-fibre breakfast cereals may have around 10g of fibre per serve. If this cereal is not accompanied by enough fluid, it may cause abdominal discomfort or constipation.

How much fibre do we need?

Recommended daily fibre intake for adults

Many adults do not consume enough fibre – on average, most Australians consume 20–25g of fibre daily.

The recommended daily fibre intake is:

- men = 30g of fibre each day
- women = 25g of fibre each day.

Recommended daily fibre intake for children

- children (4 to 8 years) = 18g
- girls (9 to 13 years) = 20g
- girls (14 to 18 years) = 22g
- boys (9 to 13 years) = 24g
- boys (14 to 18 years) = 28g.

Ways to increase your fibre intake

Most Australians do not eat enough fruit and vegetables, beans/legumes, or whole grain cereals - all of which are great sources of fibre.

Simple suggestions for increasing your daily fibre intake include:

- Eat breakfast cereals that contain barley, wheat or oats.
- Switch to wholemeal or multigrain breads and brown rice.
- Add an extra vegetable to every evening meal.
- Snack on fruit, dried fruit, nuts or wholemeal crackers.

A daily intake of more than 30g can be easily achi

eved if you eat:

- wholegrain cereal products
- more fruit, vegetables and legumes
- nuts or seeds instead of low-fibre cakes and biscuits.

You do not need to eat many more kilojoules to increase your fibre intake.

Higher fibre food choices	Fibre (g) (approx.)	Lower fibre food choices	Fibre (g) (approx.)
2 wholewheat cereal biscuits (e.g. Weetbix or Vita Brits)	3.2	1 cup puffed rice cereal	0.4
4 slices wholegrain bread	5.7	4 slices white bread	3.0
2 pieces of fruit (such as an apple and pear)	4.9	1 piece of fruit (apple) 1/2 cup canned fruit, undrained	1.7 1.4
1 cup frozen mixed vegetables	8.6	1/2 cup frozen mixed vegetables	4.3
1 small, boiled potato (with skin on)	2.8	1 cup of mashed potato	1.7
1 cup brown rice	2.7	1 cup white cooked rice	1.0
2 wholemeal dry biscuits	1.5	2 plain dry biscuits	0.4
25 almonds	3.0	1 slice plain cake	0.6
1 cup whole fruit juice	0.5	1 cup commercial fruit juice	0.8
Total	32.9		15.3

A sudden increase in dietary fibre

Make sure you stick to the recommended intake and slowly introduce fibre into the diet to avoid any negative outcomes.

A sudden switch from a low-fibre diet to a high-fibre diet may lead to some abdominal pain and increased flatulence (wind).

Also, very high-fibre diets (more than 40g daily) are linked with decreased absorption of some important minerals (such as iron, zinc and calcium). This occurs when fibre binds these minerals and forms insoluble salts, which are then excreted. This could result in an increased risk of developing deficiencies of these minerals in susceptible people.

Also, it is better to get fibre from food sources rather than from fibre supplements, as these can aggravate constipation, especially if you do not increase the amount of water you drink daily.