
Cereals and wholegrain foods

Summary

- Wholegrain cereals and foods can reduce the risk of developing diseases such as coronary heart disease, cancer, diabetes and diverticular disease.
 - A high intake of highly refined cereals has been linked to diabetes and some types of cancer.
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Wholegrain cereals and foods can reduce the risk of developing certain diseases, including coronary heart disease, colon cancer, diabetes and diverticular disease. Common cereal foods include bread, breakfast cereals, rice, and pasta.

Types of grains, wholegrains and cereals

Grains include wheat, barley, oat, rye, corn, rice, millet and triticale. Wholegrains include wholemeal or wholegrain breads or crispbreads, dark 'seedy' breads, wholegrain breakfast cereals, wheatgerm, brown rice, puffed whole grains, bulgur, quinoa, couscous, popcorn and oatmeal.

Refined cereals include cake, desserts, white bread, pasta, muffins, sweet or savoury biscuits, refined grain breakfast cereals, white rice, pancakes, waffles and pizza.

Nutritional content of wholegrain cereals

Wholegrains consist of three major parts, including:

- bran – the outer layer of the grain which contains fibre, omega-3 fatty acids, vitamins and minerals
- endosperm – the main part of the grain, which contains mainly starch
- germ – the smallest part of the grain, which contains vitamin E, folate, thiamine, phosphorus, and magnesium.

Benefits of wholegrain cereals

Wholegrain cereals are a rich source of many essential vitamins, minerals and phytochemicals (compounds found in plant foods that have been linked to significant health benefits). The typical wholegrain cereal food is:

- low in saturated fat, but is a source of polyunsaturated fats, including omega-3 linolenic acid
- cholesterol-free
- high in soluble and insoluble fibre, and resistant starch
- an excellent source of carbohydrates
- a significant source of protein
- a good source of B group vitamins, including folate
- a good source of many minerals, such as iron, magnesium, copper, phosphorus and zinc
- a good source of antioxidants and phytochemicals that can help lower blood cholesterol levels.

Protective chemicals in wholegrains

Wholegrain cereals contain many different phytochemicals which have been linked to significant health benefits). These phytochemicals include:

- lignans – which can lower the risk of coronary heart disease, and slow or turn back cancers in animals
 - phytic acid – which reduces the glycaemic index (GI) of food. This may be important for people with diabetes, and helps protect against the development of cancer cells in the colon
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- saponins, phytosterols, squalene, oryzanol and tocotrienols – which have been found to lower blood cholesterol
- phenolic compounds – which have antioxidant effects.

When wholegrains are refined

When grains are refined (for example, to produce white flour), the bran and germ layers are generally removed, leaving only the endosperm. This process can cause significant losses of fibre, vitamins, minerals, antioxidants and phytochemicals from the grains.

Some fibre, vitamins and minerals may be added back into refined cereal products (such as white bread), which compensates for losses, but it is impossible to add the mix of phytochemicals that is lost in the processing. In Australia, it is mandatory for wheat flour used in bread making to be fortified with folic acid and thiamine, and for the salt to be iodised.

Refined cereals often have high levels of added sugar, fat or salt, and generally have a higher GI than their wholegrain equivalents. Eating excessive amounts of refined cereals may cause sharp rises in blood sugar levels and strong responses from the pancreas, which, over time, coupled with other unhealthy dietary behaviours, may lead to the development of diabetes.

Wholegrains help protect against heart disease

Eating wholegrain cereal foods (especially those with fibre from oats or barley) is associated with protective effects against heart disease in adults. Studies have shown that a high intake of wholegrains (at least 2.5 serves per day) is associated with lower risk of cardiovascular events. Also, a study of postmenopausal women found that six or more servings of wholegrain foods per week protected against the effects of cardiovascular disease.

A contributing factor for heart disease is high blood cholesterol levels. Regularly eating wholegrain cereals that are rich in soluble fibre, such as oats (which contain beta-glucans) and psyllium, has been found to significantly reduce the amount of cholesterol in the bloodstream and may be protective against the development of heart disease.

Wholegrains and type 2 diabetes

Results from the Nurses Health Studies I and II showed that two serves of wholegrain cereal foods each day can reduce the risk of developing type 2 diabetes by 21 per cent. The fibre from wholegrain cereals in particular may protect against the development of this condition. People with diabetes may also benefit from eating wholegrain cereals, which have been linked to improvements in insulin sensitivity and better diabetes control.

Wholegrains and weight management

People who are overweight or obese tend to have energy-dense diets. High-fibre foods, such as wholegrain breads and cereals, can be an effective part of any weight loss program as they tend to have a lower energy density. This means they provide fewer kilojoules per gram of food. High-fibre foods take longer to digest and create a feeling of fullness, which can discourage overeating. Wholegrains are also naturally low in saturated fat and contain healthier polyunsaturated fatty acids.

Wholegrains, cereals and bowel health

High-fibre foods such as wholegrain cereal products increase movement of food through the digestive tract. The result is increased stool (faeces) bulk, softer and larger stools, and more frequent bowel actions. This provides a good environment for beneficial bowel bacteria, while decreasing levels of destructive bacteria and the build-up of carcinogenic compounds. Wheat fibre can bind certain toxins and remove them from the large bowel in the faeces.

A high-fibre diet, especially one high in insoluble fibre, has been associated with decreased risk of developing colon cancer and diverticular disease (a condition where 'pouches' form in the wall of the intestine).

Wholegrain cereals and cancer

Eating one to three serves of wholegrain cereals high in dietary fibre each day is associated with a reduced risk of colorectal cancer in adults. Three servings of wholegrains daily (about 90 g) may lead to a 20 per cent reduction in the risk of colorectal cancer – and further reductions in risk may be possible with higher wholegrain intakes.

Wholegrain cereals are recommended for health

Wholegrain cereals are recommended as part of a healthy diet. The Australian Guide to Healthy Eating recommends adults aged 19-50 years eat six serves of cereal foods daily, most of which should be wholegrain. In older adults aged 51-70 years, men and women should consume at least six serves and four serves of cereal foods respectively.

In adults aged 70 years and over, men and women should consume at least 4.5 serves and three serves of cereal foods respectively. Amounts recommended for children and adolescents depend on their age and sex.

Choosing bread

Tips when buying bread include:

- When you buy cereal products, look for words like 'wholegrain' or 'wholemeal'.
- Grainy and seedy breads are more nutritious and have a lower GI than more refined breads.
- Some 'multigrain' breads are made with white flour and various whole grains are added. Wholemeal wholegrain bread is made with wholemeal flour plus whole grains. It generally has more fibre and nutrients, and a lower GI than wholemeal, wholegrain or white breads.
- Sourdough breads have a lower GI (especially dark rye), as they contain 'wild' yeast. This causes sourdough bread to rise more slowly and therefore have more health benefits, whereas other breads have specially cultured baker's yeast, which causes bread to rise very quickly.

Where to get help

- **Your GP (doctor)**
- **Dietitians Association of Australia** Tel. **1800 812 942**

This page has been produced in consultation with and approved by:

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