



Whole vs refined grains

Findings of recent study indicates a link between grain choice & heart health

by Andrew Wilkinson, Milling and Grain magazine, UK

The invention of industrialised roller mills in the late 19th century changed the way we process grains. In the milling process, the bran and germ are stripped away, leaving only the soft, easy-to-digest endosperm.

Without the fibrous bran, the grain is much easier to chew. The germ is also removed because of its fat content, with this measure limiting the shelf life of processed wheat products. This means that the resulting highly processed grains are much lower in nutritional quality.

Although refining wheat does create fluffy flour that makes light, airy and great tasting breads and pastries, the process strips away more than half of wheat's B vitamins, 90 percent of the

vitamin E, with most of the fibre also removed (<https://mymag.info/e/1698>).

Although some nutrients may be added back by fortification, other health-promoting components of whole grains such as phytochemicals cannot be replaced.

With this information in mind, it comes as no surprise that in recent years, advice about eating whole grains has almost become as commonplace as prods in the direction of consuming more fruits and vegetables.

Making a big difference

How seriously should we be taking this advice, how much does that 'whole' aspect of the grains that we consume really matter? Well, according to research presented at the American College of Cardiology Middle East recently, this factor makes a big

WHOLE
GRAIN



bran

fiber-filled outer layer with B vitamins and minerals

endosperm

starchy carbohydrate middle layer with some proteins and vitamins

germ

nutrient-packed core with B vitamins, vitamin E, phytochemicals, and healthy fats

REFINED
GRAIN



Whole grains...

Have had very little removed in processing and contain all three parts of the grain including:

- The bran – the tough outer shell which contains fibre, B vitamins including folic acid, and minerals such as magnesium, iron and zinc.
- The endosperm – the starchy, middle part which is made of carbohydrate and some protein.
- The germ – the nutrient-rich inner part which, if germinated, would grow into the new plant. It contains some unsaturated fats, B vitamins, vitamin E, selenium, and other plant compounds called phytonutrients.

Whole grains offer a 'complete package' of health benefits, unlike refined grains, which are stripped of valuable nutrients in the refining process.

difference to our heart health.

During the study (more details of which can be read by following this link: <https://mymag.info/e/1699>), the researchers studied a sample of approximately 2000 men and women in Iran, most of whom had premature coronary artery disease (PCAD), which limits blood flow to the heart. They used a food frequency questionnaire to evaluate the potential impact of diet on their diagnosis.

In their conclusions, the researchers found that higher consumption of refined grains was associated with higher likelihood of having PCAD, while whole grain intake resulted in lower likelihood.

The study's lead author Mohammad Amin Khajavi Gaskarei, MD, notes in a news release that there are many factors for why people may be consuming more refined grains, such as affordability or cultural norms.

That said, he also emphasises that the higher levels of consumption of these kinds of grains could be considered similar to consuming a diet containing a breadth of unhealthy sugars and oils.

Important for a variety of physiological functions

In terms of why whole grains may protect heart health, a large part of the influence is related to soluble fibre, according to Amanda Kostro Miller, RD, registered dietitian and medical reviewer at Botanical Institute.

She was not involved in the research, but she states that this type of fibre, which is lacking or absent in refined grains, has been shown to potentially lower LDL cholesterol, the 'bad' kind that the US based Centers for



Examples of whole grains include:

- Barley
- Brown rice
- Buckwheat
- Bulgur (cracked wheat)
- Millet
- Oatmeal
- Popcorn

Disease Control reports can raise risk for heart disease and stroke.

Ms Miller added that the bran in whole grains (which gets stripped out in refined grains) contains many B vitamins as well as minerals, which can also help heart health. Research supports this idea that B vitamins can protect the heart.

For example, research in the journal *Stroke* found an association between adequate intake of vitamin B6 and vitamin B9 (also known as folate) and a reduced risk of mortality from stroke, coronary heart disease, and heart failure.

In some cases, B vitamins as well as iron may be added back into a product, but soluble fibre is often not used to boost a refined grain option.

These recent findings are in line with recommendations from the American Heart Association, which notes that in addition to fibre and B vitamins, whole grains also include magnesium, iron, and selenium, which are important for a variety of physiological functions like forming new cells and carrying oxygen in the blood.

Examples of whole grains includes brown rice, buckwheat, millet, oatmeal, barley, quinoa, rye, wild rice, and many others. Choosing options like these will not only be helpful for your heart, Ms Miller adds, but they've also been shown to lower risk of diabetes, help you feel full longer, and provide a new way to get more diversity in your diet overall.

All three parts of the grain

'Wholegrains' are the seeds of cereal plants such as wheat, barley and rye. They have had very little removed in processing and contain all three parts of the grain, so they contain a wide range of nutrients.



In fact, whole grains offer a 'complete package' of health benefits, unlike refined grains, which are stripped of valuable nutrients in the refining process. All whole grain kernels contain three parts: the bran, germ, and endosperm. Each section houses health-promoting nutrients. The bran is the fibre-rich outer layer that supplies B vitamins, iron, copper, zinc, magnesium, antioxidants, and phytochemicals.

The germ is the core of the seed where growth occurs; it is rich in healthy fats, vitamin E, B vitamins, phytochemicals, and antioxidants. The endosperm is the interior layer that holds carbohydrates, protein, and small amounts of some B vitamins and minerals.

These components have various effects on our bodies, with bran and fibre slowing the breakdown of starch into glucose; thus, maintaining a steady blood sugar rather than causing sharp spikes.

Fibre has also been shown to help lower cholesterol as well as move waste through the digestive tract. It may also help prevent the formation of small blood clots that can trigger heart attacks or strokes.

Phytochemicals are natural chemical compounds in plants that have been researched for their role in disease prevention. Along with essential minerals such as magnesium, selenium and copper found in whole grains are also widely believed to be able to protect us against some forms of cancer.