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## ANCIENT GRAINS IN THE MODERN DIET

**In our modern-day health-conscious society, ancient grains are back in vogue and appearing more frequently in ingredient lists of foods on our supermarket shelves. Traditionally, eight grains are considered cereals: wheat, rice, corn, oats, rye, barley, millet and sorghum.**

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Of these grains, wheat, corn and rice make up the bulk of the world's grain production and consumption. With the ever-increasing popularity of the paleo diet and 'clean eating', many people are turning away from these modern staple crops and choosing alternative ancient grains.

'Ancient grains' is one of the latest health marketing buzzwords. Similar to superfoods, there is no real definition of what classifies an ancient grain. For the health-conscious consumer, foods containing ancient grains can evoke perceptions of a food being more wholesome, nutritious and less processed. They are now becoming more commonplace in everyday foods from breads, cereals and even drinks. Ancient grains are being marketed as nutritional powerhouses that are 'cleaner' choices than the standard wheat or rice varieties. They reportedly haven't been selectively bred to the same extent as their modern staple crops and claim to be nutritionally similar to those strains enjoyed by Incan, Aztec and other ancient civilisations.

Ancient grains include both grains (seeds of grass plants) and pseudo-grains (seeds of non-grass plants) that have reportedly remained unchanged in their nutritional status for millennia. As seeds of non-grass plants, buckwheat, amaranth and quinoa aren't classified as true grains. However, since they are typically grown and cooked in a similar manner to more traditional grains, they are considered to be pseudograins.

### THE ANCIENT GRAIN HEALTH-HALO

Market research shows that consumption of ancient grains is on the rise and consumers are willing to pay a premium price. This indicates that ancient grains are a health-halo worth being shopping savvy about. While in their wholegrain form, ancient grains can be nutritionally superior to modern staple grains, when used as refined flours or in tiny amounts as an ingredient, the nutritional difference may be negligible. Many new foods boast to contain ancient grains, riding on the health-halo effect, convincing consumers to purchase products that may be nutritionally similar, if not inferior, to the standard version. Some of these products contain a little as 1% of the claimed ancient grain in the ingredients list, making their nutritional contribution minimal.

A perfect example of the health-halo effect is a version of Cheerios in the US containing the ancient grains quinoa, spelt and kamut wheat. Consumers may purchase the product on the assumption that the inclusion of these ancient grains means it is a more wholesome choice than the original. However, upon looking at its nutritional profile, the 'lightly sweetened' ancient grains variety contains five times more sugar than the original, making it a less nutritious choice.

### NUTRITIONAL BENEFITS OF ANCIENT GRAINS

When consumed in their wholegrain format, ancient grains are typically higher in protein and fibre, providing more vitamins, minerals and other



Table 1: Nutrition composition per 100g uncooked grain

	Wheat	Brown Rice	Amaranth	Buckwheat groats	Chia	Kamut	Quinoa	Millet	Sorghum	Spelt	Teff
<b>Energy (kJ/kcal)</b>	342	362	371	343	486	337	368	378	329	14.6	367
<b>Fat</b>	1.7	2.7	7.0	3.4	30.7	2.1	6.1	4.2	3.5	2.4	2.4
<b>Saturated</b>	0.3	0.5	1.5	0.7	3.3	0.2	0.7	0.7	0.6	0.4	0.4
<b>Mono-unsaturated</b>	0.2	1.0	1.7	1.0	2.3	0.2	1.6	0.8	1.1	0.4	0.6
<b>Poly-unsaturated</b>	0.8	1.0	2.8	1.0	23.7	0.6	3.3	2.1	1.6	1.3	1.1
<b>Carbohydrate</b>	75.9	76.2	65.3	71.5	42.1	70.6	64.2	72.9	72.1	70.2	73.1
<b>Sugar</b>	0.4		1.7	-	-	7.8	-		2.5	6.8	1.8
<b>Protein</b>	11.3	7.5	13.6	13.3	16.5	14.5	14.1	11.0	10.6	14.6	13.3
<b>Fibre</b>	12.2	3.4	6.7	10.0	34.4	11.1	7	8.5	6.7	10.7	8.0
<b>Calcium</b>	32	33	159	18	631	22	47	8	13	27	180
<b>Iron</b>	4.6	1.8	7.6	2.2	7.7	3.8	4.6	3.0	3.4	4.4	7.6
<b>Magnesium</b>	93	143	248	231	335	130	197	114	165	136	184
<b>Phosphorus</b>	355	264	557	347	860	364	457	285	289	401	429
<b>Potassium</b>	432	268	508	460	407	403	563	195	363	388	427
<b>Sodium</b>	2	4	4	1	16	5	5	5	2	8	12
<b>Zinc</b>	3.3	2.0	2.9	2.4	4.6	3.7	3.1	1.7	1.7	3.3	3.6
<b>thiamin</b>	0.4	0.4	0.1	0.1	0.6	0.6	0.4	0.4	0.3	0.4	4
<b>Riboflavin</b>	0.1	0.04	0.2	0.4	0.2	0.2	0.3	0.3	0.1	0.1	0.3
<b>Niacin</b>	4.4	4.3	0.9	7.0	8.8	6.4	1.5	4.7	3.7	6.8	3.4
<b>Vitamin B6</b>	0.4	0.5	0.6	0.2	-	0.3	0.4	0.4	0.4	0.2	0.5
<b>Vitamin E</b>	1.0	-	1.2	-	0.5	0.6	2.4	0.05	0.5	0.8	0.1

\*Nutrient data obtained from the USDA nutrient database

nutrients than their modern counterparts. This can make them superior choices - particularly for those on a gluten-free diet. However, these claims are not hard and fast statements, as nutritional quality will differ according to the variety, soil and conditions under which the grains are grown. Table 1 compares the nutritional composition of a number of ancient grains in their raw, uncooked format to both whole, wheat and brown rice. Nutritional composition of ancient grains is also influenced by cooking methods and whether they have been refined from their wholegrain form.

Sorghum, millet, teff, amaranth, buckwheat and quinoa are ancient grains that are naturally

gluten-free and suitable for individuals with coeliac disease or gluten intolerances. However, einkorn, emmer (farro), freekeh, kamut and spelt are all heirloom varieties of wheat containing gluten and are unsuitable choices. They are often marketed as being lower in gluten, with claims that they are better tolerated and digested due to having not been selectively bred to the same extent.

#### Amaranth

Amaranth is a small gluten-free pseudo-grain originating from South America with a light and mild nutty flavour. Nutritionally it is high in protein, vitamin C, iron and calcium. When

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Image: Tubifex Wikimedia Commons

cooked it can be used as a gluten-free alternative to couscous, or can be ground into flour and used in baking.

### **Buckwheat**

Buckwheat is a pseudo-grain, a seed fruit related to rhubarb that originated in northern Europe and Asia. High in fibre and protein, it is a gluten-free grain, despite the word 'wheat' in its name. Buckwheat groats contain the best nutrient profile as an intact, wholegrain which can be toasted to reduce cooking time and develop a pleasant nutty flavour. Buckwheat used instead of barley in soups, as a porridge, or ground into flour to make gluten-free pancakes, cakes and other baked goods. Toasted buckwheat groats take about 15-20 minutes to cook, while the untoasted grain takes 20-30 minutes.

### **Chia seeds**

Technically, neither a grain nor a pseudograin, chia, however, is frequently included under the ancient grain banner in food products. Rich sources of protein, fibre and heart healthy polyunsaturated fats, chia seeds are packed full of other nutrients including calcium, iron and zinc. They absorb liquid to form a viscous gel and

are often used to make chia puddings with dairy or dairy-free milks, sprinkled onto smoothies or cereal or mixed into baked goods.

### **Farro, Emmer and Einkorn**

Farro is the Italian name for three varieties of heirloom grains: emmer einkorn and spelt. It is a low-yielding member of the wheat family that can grow in arid conditions. Originating in Egypt, it has been found in the tombs of ancient Egyptian kings, was allegedly carried by ancient Roman legions in their rations for its nutritional composition and consumed frequently in Italy. Farro has a nutty flavour, chewy texture and is high in fibre, protein, zinc, magnesium and iron. Wholegrain farro requires overnight soaking to avoid tough kernels and cooking times of well over an hour. Pearled and semipearled farro has had some of the bran removed and can be cooked without soaking in a similar manner to rice within 15-25 minutes. Farro can be added into soup, served al dente in salads and can be used to make pasta or bread.

### **Freekeh**

Freekeh is a young, roasted green wheat with a unique smoky aroma and nutty toasted taste. Native to Lebanon, Jordan, Syria and Egypt, freekeh is harvested young (green) when the grains are still soft, dried, roasted to burn off the chaff and develop a golden colour then polished and cracked. Freekeh is high in protein, fibre, iron, magnesium and zinc. It is low in GI and has a low insulin response which may make it helpful for people with Type 2 diabetes. Freekeh can be used as an alternative to couscous or rice, added to soups, used in salads or cooked into a porridge.

### **Kamut® khorasan wheat**

Kamut is a trademarked brand of wheat that is reported to be a modern descendent of an ancient Egyptian grain. It is high in protein and contains plenty of B vitamins, phosphorus, zinc and magnesium. Kamut is a large, sweet, nutty flavoured grain that is significantly higher in sugar and contains less fibre than modern wheat. Kamut kernels can be soaked overnight to reduce cooking time then simmered in a similar manner to rice for 30-40 minutes until tender. Kamut can be used as an alternative to wheat flour in baked goods, or cooked in its wholegrain format as an alternative to rice or couscous, added to salads, soups or cooked into a porridge.

### **Quinoa**

Quinoa is a gluten-free grain originating from South America. It is low GI and packed with fibre, B vitamins and minerals, including magnesium, potassium, iron, calcium, phosphorous and zinc. A more commonly known ancient grain, quinoa can be used as an alternative to rice or couscous, added to soups, breads or cooked into a porridge.

### **Sorghum**

Sorghum is a gluten-free grain related to millet that originated in parts of Africa and Australia and can be grown in arid, infertile environments. It is low in GI and high in protein and fibre. It can be ground into flour and used in a variety of baked goods or boiled whole and eaten as a rice alternative.

### **Millet**

Millet is a small, seed-like grain believed to have originated in North Africa that grows well in arid, infertile environments. It does not contain gluten so can be eaten by people with coeliac disease or gluten sensitivities. It is a good source of protein, manganese, phosphorus, magnesium and fibre. Different cooking methods can influence the texture of millet. When stirred frequently with plenty of water, it can develop a texture similar to mashed potato. If left unstirred, it will have fluffy grains similar to that of rice.

### **Spelt**

Spelt is a low-yielding grain of the wheat family, often linked with farro or emmer. Spelt is high in fibre and iron and is a source of protein, manganese, zinc and iron. Foods made from



Teff

Image: Rasbak, Wikimedia Commons

spelt often misleadingly claim to be gluten-free or better tolerated forms of gluten. Wholegrain spelt kernels can be soaked overnight to reduce cooking time. It can be boiled and used as a rice alternative, added to soups or ground into a flour for baked goods.

### **Teff**

Teff is a tiny grain made from the seed of an Ethiopian grass. It is gluten-free and packed full of nutrients including protein, magnesium, calcium, fibre, thiamin and iron. Teff is a versatile grain with a nutty flavour that can be eaten whole, ground into flour and used in baked goods or boiled into a porridge consistency. Traditionally it is ground into a flour and fermented in Ethiopia to make injera, a sourdough flatbread that is soft and thin like a pancake.

## **CONCLUSION**

Dietitians can benefit from knowing nutritional differences between modern crops and ancient grains. As cooking methods and preparation techniques can impact nutritional quality and palatability, having the knowledge and skills to prepare ancient grains is important.

In their wholegrain format, consuming ancient grains can improve fibre, protein and micronutrient intake. As ancient grains become more mainstream and used as ingredients in every day food products, it is important for consumers to avoid being blinded by any health-halo effect this marketing buzzword may provide.

Information sources:

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