Superfoods Fact Sheet

Quinoa
(Chenopodium quinoa)

Parts used: grain

Quinoa (pronounced keen-wah) is native to South America that is being shown to have amazing nutritional benefits. Often classified as a grain, it is technically a seed, and is unusual in that it is considered a complete protein, containing all the essential amino acids.

Quinoa comes from the same family of plants as beetroot, spinach, chard and amaranth, and has a long history of use as both food and medicine in its native South America. It is the least allergenic of the grains and is naturally gluten free, and is a great, nutritionally rich alternative to traditional grains and cereals.

Historic and Traditional Uses of Quinoa

Although unknown to the West until fairly recent history, quinoa has been a mainstay of the South American diet since the Incan Empire, dating back to 1200 AD. It can survive and thrive in tough, growing conditions, even at altitudes of 10,000 feet up in the Andes.

Historical evidence suggests that it was domesticated by native Americas as far back as 3 -5,000 BC, with archaeological finds of quinoa in tombs in both Chile and Peru.

Its importance was such that it was considered a sacred grain by pre-Columban Incas and they called it ‘chisaya mama’ or mother grain, and its unusual properties were highly valued. Indeed, so important was it that the Incan emperor would traditionally sow the first grains of the season using ‘golden implements’, and it was considered one of their main sources of nutrition.

With the conquest of South America by the conquistadores, for a time quinoa cultivation was forbidden, due to its use in sacred ceremonies, and the natives were forced to grow wheat. Fortunately, those dark days are over and both knowledge and cultivation of this unusual grain are spreading around the world.

Health Benefits of Quinoa

As a fairly recent arrival on the global food stage, this South American grain has yet to have extensive research conducted on all its possible health benefits. Now its nutrient profile has been established, it is possible to surmise how the many beneficial compounds it contains could contribute to maintaining and improving a number of health issues. Some laboratory trials have taken place but no large-scale human studies.
Amongst those benefits that could be expected to be found are help to those with type II diabetes as quinoa has many things in common with other foods which are known to decrease the risk of this – namely, fibre, which is key for blood sugar regulation, good protein quality, and also antioxidant phytonutrients which impact chronic inflammation.¹

Quinoa is also a candidate for helping reduce risk of heart disease. Some animal studies have already demonstrated its ability to lower both total cholesterol levels and improve levels of HDL or ‘good’ cholesterol. Once again, the anti-inflammatory nutrients are likely to be of benefit to reducing levels of arterial inflammation and thus arteriosclerosis and other forms of cardiovascular disease. It has also been shown that quinoa produces lower free fatty acid levels and triglycerides concentrations than other grains, therefore making it a healthier choice.²

Other areas where a food with this nutrient profile are likely to be helpful are in reducing the risk of cancer due to its antioxidant and anti-inflammatory compounds, and also reducing the incidence of allergy. This is particularly true of those who react badly to common grains such as wheat, and for those with digestive problems both young and old. It is more easily digestible than wheat, and its high protein content is important in helping to metabolise nutrients as well as repair damage. It also has pre-biotic properties, and thus helps to improve populations of the important ‘friendly’ bacteria in the gut.

Other uses that have been postulated are migraine protection due to its high magnesium and Vitamin B2 content, and migraine sufferers who have high levels of these nutrients report fewer attacks. Its high levels of magnesium and the amino acid tryptophan also means that it may help to reduce stress and improve sleep, and animal studies have shown it can contribute to weight loss, possibly due to its high satiety factor.

Anti-Inflammatory
Quinoa contains a wide range of anti-inflammatory nutrients, including many antioxidants. The link between inflammation and many degenerative diseases has been known about by both orthodox and complimentary practitioners for years and a lot of research has been undertaken to shown the link. When it comes to quinoa, only animal studies have so far been carried out, human trials are yet to be undertaken, but preliminary results are promising with a daily intake of quinoa shower lower levels of inflammation in the fatty tissue and intestinal linings of laboratory rats.³

There are many aspects of quinoa yet to be studied. Its high antioxidant and anti-inflammatory benefits mean that it is a prime candidate for risk reduction of a variety of serious degenerative diseases.

It is also virtually hypo allergenic and suitable for those who have difficulties with many other forms of grain. As it is gluten free is can be added to gluten-free foods to improve their nutritional content, and can form part of a gluten free diet.

² European Journal of Nutrition, August 2004;4394):198-204
³ Vidueiros SM, Fernandez I, Bertero HD et al. Effect of quinoa (Chenopodium quinoa, W) on the intestinal mucosa of growing Wistar rats. FASEB J Apr 2012;26:1033.4
Nutritional Value of Quinoa

Quinoa has an overall nutritional richness unusual in a grain, as it lacks some of the classic nutritional shortcomings of a grain, namely a lack of the two essential amino acids lysine and isoleucine, and a lack of fats. Quinoa has significantly greater levels of lysine and isoleucine than other grains, enabling it to serve as a complete protein source i.e. a food which contains all the essential amino acids. This is extremely unusual for a grain – although technically quinoa is a seed.

Another shortcoming of grains is that they have a minimal fat content. For example, it takes 350 calories worth of wheat to provide 1 gm of fat, whilst quinoa only takes 63 calories to provide 1 gm of fat. If you have been brainwashed by the food industry you might think that is not so good, but fat – both saturated and unsaturated – is essential for human health and has been a major part of our diet – and wellbeing – for hundreds of thousands of years. Around 25% of the fat in quinoa is in the form of oleic acid, a heart-healthy fat, and another 8% is ALA or alpha-linolenic acid, the plant form of Omega 3.

Quinoa also contains certain anti-inflammatory antioxidant phytonutrients known to include:

- Polysaccharides – arabinanans and rahmnogalacturonans
- Hydroxycinnamic and hydroxybenzoic acids
- Flavonoids – quercetin and kaempferol
- Saponins – oleanic acid, hederagenin acid, serjanic acid

It also contains small amounts of Omega 3 and ALA, which both have anti-inflammatory properties.

Quinoa also contains significant amounts of some of the Vitamin E family of tocopherols, particularly gamma-tocopherol, which has been associated with anti-inflammatory properties in research.

Other important nutrients to be found in reasonable amounts in quinoa include manganese, magnesium, folate, phosphorus, copper and fibre.

The fact that quinoa is a complete protein is unusual and makes it an important grain for vegetarians, who can struggle to get all the amino acids required for health, unless they know how to combine foods properly. One cup of quinoa provides 9 gms of protein – more than a medium chicken egg! It also has a similar amino acid profile to the milk protein, casein, and its nutritional quality has been compared to that of dried whole milk. It is also a good fibre source, both soluble and insoluble providing 7 gm per 100 gm.

In addition to this, good levels of various B vitamins are to be found in quinoa, as well as Vitamin A, iron, copper, calcium, potassium, manganese and magnesium.

Nutrient value per 100 gm*:

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Amount</th>
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<tbody>
<tr>
<td>Calcium</td>
<td>47 mg</td>
</tr>
<tr>
<td>Magnesium</td>
<td>197 mg</td>
</tr>
<tr>
<td>Iron</td>
<td>4.57 mg</td>
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<tr>
<td>Phosphorus</td>
<td>457 mg</td>
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</tbody>
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4 Food and Agriculture Organization (FAO), United Nations

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<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>Potassium</td>
<td>563 mg</td>
</tr>
<tr>
<td>Sodium</td>
<td>5 mg</td>
</tr>
<tr>
<td>Zinc</td>
<td>3.10 mg</td>
</tr>
<tr>
<td>Vit B1</td>
<td>0.360 mg</td>
</tr>
<tr>
<td>Vit B2</td>
<td>0.318 mg</td>
</tr>
<tr>
<td>Vit B3</td>
<td>1.520 mg</td>
</tr>
<tr>
<td>Vit B6</td>
<td>0.487 mg</td>
</tr>
<tr>
<td>Folate</td>
<td>184 µg</td>
</tr>
<tr>
<td>Vit A</td>
<td>14 iu</td>
</tr>
<tr>
<td>Vit E</td>
<td>2.44 iu</td>
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*Source: USDA Standard Nutrient Reference database

**How To Use Quinoa**

Easily available now in most supermarket quinoa grains cook quickly – usually in about 15 minutes. Always give the grains a quick rinse under the cold tap before cooking in order to rinse off the bitter saponins which coat the outside. It is light and fluffy when cooked, with a mild nutty flavour. It can be used in the place of grains such as rice or couscous, it can be sprouted or even combined (cooked) with foods such as muffins, breads and even pancakes to enrich them.