**The Real Deal on Amino Acids in Plant-Based Diet**

Protein is one of the most crucial nutrients to the human body and a little bit of protein can go a long way in improving varying aspects of your health. From the strength of your body to that of your hair, skin, and nails, protein’s amino acid chains perform vital tasks within your body that make it a prime nutrient to be sure you get enough of. Protein is also essential for healthy neurotransmitter function, along with overall energy levels. While carbs and fats have their place in a diet, most everyone knows that protein is a nutrient we shouldn’t leave out.

Luckily, all foods contain a little protein, and [a large variety of plant-based foods provide many of the essential amino acids](http://www.onegreenplanet.org/vegan-health/protein-in-a-plant-based-diet-a-vegan-bodybuilders-perspective/) once believed to only exist within animal-based foods. Essential amino acids are amino acids that are the building blocks of protein that our body can’t produce by itself. In other words, if we don’t eat them, we won’t get enough of them. But steak, beef, chicken, eggs, pork, and milk are not the only sources of essential amino acids; plants have plenty of them our bodies can use the same way.

Out of the 22 amino acids that exist, nine are essential and 11 are non-essential. Below are a list of the nine essential amino acids and [plant-based foods that are good sources of eac](http://alternativehealthatlanta.com/wp/wp-content/uploads/2012/07/essential-amino-acids-in-plant-based-foods1.pdf)h. Some sources of amino acids, like chia and [hemp seeds](http://www.onegreenplanet.org/vegan-food/hemp-seeds-how-to-use-this-protein-powerhouse/), also offer all essential amino acids, making them a complete protein, though remember that [all plant-based foods can form complete proteins within the body once ingested.](http://www.onegreenplanet.org/natural-health/busted-the-myth-about-incomplete-plant-based-protein/)

Here’s what each essential amino acid does and where to find it:

1. **Leucine**

Leucine is [one of the best essential amino acids for stimulating muscle strength and growth](http://www.ncbi.nlm.nih.gov/pubmed/15930468), and also referred to as a BCAA (brand-chain amino acid). Leucine helps [regulate your blood sugar](http://www.livestrong.com/article/261185-what-are-the-functions-of-leucine/) by moderating insulin into the body during and after exercise and can even help [prevent and treat depression](http://www.livestrong.com/article/261185-what-are-the-functions-of-leucine/) by the way it acts on neurotransmitters in the brain.

Good plant-based sources include: seaweed, pumpkin, peas and pea protein, whole grain rice, sesame seeds, watercress, turnip greens, soy, sunflower seeds, kidney beans, figs, avocados, raisins, dates, apples, blueberries, olives and even bananas. Don’t limit yourself to one food of these choices, and aim for a serving of either seaweed, leafy greens, hemp seeds, chia seeds,  grains, legumes, seeds, or beans at each meal to be sure you get enough high-quality plant-protein.

**2. Isoleucine**

Isoleucine is another BCAA similar to leucine, however with a few different responsibilities. It is an isolated form of leucine that specificially helps the body produce energy and hemoglobin. It’s also vital [assisting in nitrogren growth within the muscle cells,](http://bestvitaminsources.com/html_pgs/amino_acids_all/amino_Isoleucine.html) especially in children.

Plant-based sources include: rye, soy, cashews, almonds, oats, lentils, beans, brown rice, cabbage, hemp seeds, chia seeds, spinach, pumpkin, pumpkin seeds, sunflower seeds, sesame seeds, cranberries, quinoa, blueberries, apples, and kiwis.

**3. Lysine**

Lysine is responsible for [proper growth and in the production of carnitine](http://umm.edu/health/medical/altmed/supplement/lysine) (a nutrient responsible for converting fatty acids into fuel to lower cholesterol).  It also helps the body absorb calcium for even further bone strength and also aids in collagen production. It’s vital to get enough of this amino acid since deficiency can lead to nausea, depression, fatigue, muscle depletion and [even osteoporosis.](http://umm.edu/health/medical/altmed/supplement/lysine)

Good plant-based sources of lysine include: beans (the best), watercress, hemp seeds, chia seeds, spirulina, parsley, avocados, soy protein, almonds, cashews, and some legumes with lentils and chickpeas being two of the best.

**4. Methionine**

Methionine helps form cartilage in the body [through the use of sulfur.](http://www.aminoacid-studies.com/amino-acids/methionine.html) Sulfur is a mineral essential to the production of bone cartilage and no other amino acids contain sulfur aside from methionine. People who don’t eat enough sulfur-containing foods to produce methionine in the body may suffer arthritis, damaged tissue, and poor healing. Methionine also aids in the production of muscle growth and formation of creatine, needed for optimal cellular energy.

Good plant-based sources of sulfur include: sunflower seed butter and sunflower seeds, hemp seeds, chia seeds, Brazil nuts, oats, seaweed, wheat, figs, whole grain rice, beans, legumes, onions, cacao, and raisins.

**5. Phenylalanine:**

This amino acid comes in three forms: L-phenalynaline (a natural form found in protein) and D-phenalynaline (a form produced by a laboratory), and DL phenalynaline (a combination of both forms). Always eat food-based sources before choosing supplements or enriched food products with a lab-derived version of this amino acid. Phenylalanine is important in the body because it turns into tyrosine once ingested, which is another amino acid that’s needed to make proteins, brain chemicals, and thyroid hormones. Not obtaining enough of this amino acid [can result in](http://umm.edu/health/medical/altmed/supplement/phenylalanine) brain fog, lack of energy, depression, lack of appetite, or memory problems.

Good sources include: spirulina and other seaweed, pumpkin, beans, rice, avocado, almonds, peanuts, quinoa, figs, raisins, leafy greens, most berries, olives, and seeds.

**6. Threonine:**

Threonine supports [a healthy immune system, heart, liver, and central nervous system health](http://www.vitaminstuff.com/amino-acid-threonine.html). It also helps maintain a balance of proteins within the body to assist in overall repair, energy, and growth. This amino acid also helps the body’s connective tissues and joints in good health by producing glycine and serine in the body, two essential amino acids needed for healthy bones, skin, hair, and nails. In the liver it helps with fatty acid digestion to prevent fatty acid build-up and liver failure.

The highest sources of this amino acid are: [watercress and spirulina (which even exceed meat)](http://nutritiondata.self.com/foods-000080000000000000000.html), pumpkin, leafy greens, hemp seeds, chia seeds, soybeans, sesame seeds, sunflower seeds and sunflower butter, almonds, avocados, figs, raisins, quinoa, and wheat . Sprouted grains are also excellent sources of this amino acid as well.

**7. Tryptophan**

Known as the relaxing amino acid, trytophan is vital to a healthy nervous system and brain health, along with sleep, muscle growth and repair, and overall neurotransmitter function. It’s one of the most prominent amino acids found in turkey, milk, and cheese that cause those foods to make you feel sleepy and relaxed. Trytophan also converts to serotonin once in the brain, which creates a happy feeling tied to lower levels of stress and depression. It’s best not to consume milk and cheese sources (or turkey) for your trytophan content whenever you get the chance. Animal foods promote inflammation and there are tons of plant-based sources you can choose instead.

Plant-based sources that include high amounts of trytophan include: oats and oat bran, seaweed, hemp seeds, chia seeds, spinach, watercress, soybeans, pumpkin, sweet potatoes, parsley, beans, beats, asparagus, mushrooms, all lettuces, leafy greens, beans, avocado, figs, winter squash, celery, peppers, carrots, chickpeas, onions, apples, oranges, bananas, quinoa, lentils, and peas.

**8. Valine**

Valine is another BCAA needed for optimal muscle growth and repair. It’s also responsible for endurance and the overall maintenance of good muscle health.

High sources of valine include: beans, spinach, legumes, broccoli, sesame seeds, hemp seeds, chia seeds, soy, peanuts, whole grains, figs, avocado, apples, sprouted grains and seeds, blueberries, cranberries, oranges, and apricots.

**9. Histidine**

This amino acid helps transport neurotransmitters (chemical messengers) to the brain and also helps overall muscle health within each muscle cells. It even helps detoxify the body by producing red and white blood cells needed for overall health and immunity.  Not obtaining enough histidine [can result in](http://www.livestrong.com/article/517676-what-foods-contain-histidine/) arthritis, sexual disfunction, and even deafness. It can also make the body more susceptible to the AIDS virus.

Good plant-based sources of histidine include: rice, wheat, rye, seaweed, beans, legumes, cantaloupe, hemp seeds, chia seeds, buckwheat, potatoes, cauliflower and corn.

**How Much Do You Need?**

So how much protein do you need? Everyone is different depending on their training goals or overall lifestyle goals. If you’re eating a vegan diet, [use this  handy online calculator](http://www.healthyveganrecipes.net/featured/protein-calculator) to see how much is enough and to find out the best sources and see the [Vegetarian Resource Group](http://www.vrg.org/nutrition/protein.php) for more information on protein in a vegan diet.

Overall, eating a wide variety of whole, plant-based foods will provide you with all the essential amino acids your body needs for optimal growth, repair, and health. Feel free to make your own [vegan protein bars,](http://www.onegreenplanet.org/vegan-food/how-to-make-sugar-free-vegan-protein-bars/) and even [skip those store bought protein powders by making your own at home](http://www.onegreenplanet.org/vegan-food/diy-vegan-protein-powders/). Getting protein in a vegan diet is versatile and easy, so take advantage of these foods however you can.

**Chia Seeds**

Chia seeds are among the healthiest foods on the planet. They are loaded with nutrients that can have important benefits for your body and brain. Here are 11 health benefits of chia seeds that are supported by human studies.

1. Chia Seeds Deliver a Massive Amount of Nutrients With Very Few Calories

Chia seeds are tiny black seeds from the plant [Salvia Hispanica](https://en.wikipedia.org/wiki/Salvia_hispanica), which is related to the mint.This plant grows natively in South America. Chia seeds were an important food for the Aztecs and Mayans back in the day.They prized them for their ability to provide sustainable energy… in fact, “chia” is the ancient Mayan word for “strength.”Despite their ancient history as a dietary staple, only recently did chia seeds become recognized as a modern day superfood.In the past few years, they have exploded in popularity and are now consumed by health conscious people all over the world.

Don’t be fooled by the size… these tiny seeds pack a powerful nutritional punch.

A 1 ounce (28 grams) serving of chia seeds [contains](https://authoritynutrition.com/foods/chia-seeds/):

Fiber: 11 grams.

Protein: 4 grams.

Fat: 9 grams (5 of which are [Omega-3s](https://authoritynutrition.com/omega-3-guide/)).

Calcium: 18% of the RDA.

Manganese: 30% of the RDA.

Magnesium: 30% of the RDA.

Phosphorus: 27% of the RDA.

They also contain a decent amount of Zinc, Vitamin B3 (Niacin), Potassium, Vitamin B1 (Thiamine) and Vitamin B2.

This is particularly impressive when you consider that this is just a single ounce, which supplies only 137 [calories](https://authoritynutrition.com/debunking-the-calorie-myth/) and one gram of digestible carbohydrate! 1 ounce equals 28 grams, or about 2 tablespoons. Interestingly… if you subtract the fiber, which may not end up as usable calories for the body, chia seeds only contain 101 calories per ounce.This makes them one of the world’s best sources of several important nutrients, calorie for calorie. To top things off, chia seeds are a “whole grain” food, are usually grown organically, are non-GMO and naturally free of [gluten](https://authoritynutrition.com/what-is-gluten/). Bottom Line: Despite their tiny size, chia seeds are among the most nutritious foods on the planet. They are loaded with fiber, protein, Omega-3 fatty acids and various micronutrients.

2. Chia Seeds Are Loaded With Antioxidant

Another area where chia seeds shine is in their high amount of antioxidants. These [antioxidants](https://en.wikipedia.org/wiki/Antioxidant) protect the sensitive fats in the seeds from going rancid. Although antioxidant *supplements* are not very effective, getting antioxidants from *foods* can have positive effects on health. Most importantly, antioxidants fight the production of free radicals, which can damage molecules in cells and contribute to ageing and diseases like cancer. There are some claims online about chia seeds having more antioxidants than blueberries, but I was unable find a study to verify this claim. Bottom Line:

3. Almost All The Carbs in Them Are Fiber

Looking at the nutrition profile of chia seeds, you see that an ounce has 12 grams of “carbohydrate.” However… 11 of those grams are [fiber](https://authoritynutrition.com/why-is-fiber-good-for-you/), which isn’t digested by the body. Fiber doesn’t raise blood sugar, doesn’t require insulin to be disposed of and therefore shouldn’t count as a [carb](https://authoritynutrition.com/how-many-carbs-per-day-to-lose-weight/). The true carb content is only 1 gram per ounce, which is very low. This makes chia a [low-carb](https://authoritynutrition.com/low-carb-diet-meal-plan-and-menu/) friendly food. Because of all the fiber, chia seeds can absorb up to 10-12 times their weight in water, becoming gel-like and expanding in your stomach. Theoretically, this should increase fullness, slow absorption of your food and help you [automatically](https://authoritynutrition.com/7-ways-to-lose-weight-without-counting-calories/) eat fewer calories. Fiber also feeds the friendly bacteria in the intestine, which is important because keeping your [gut bugs](https://en.wikipedia.org/wiki/Gut_flora) well fed is absolutely crucial for health ([10](http://www.ncbi.nlm.nih.gov/pubmed/12583961)). Chia seeds are 40% fiber, by weight. This makes them one of the [best sources of fiber](https://authoritynutrition.com/22-high-fiber-foods/) in the world. Bottom Line: Almost all of the carbohydrates in chia seeds are fiber. This gives them the ability to absorb 10-12 times their weight in water. Fiber also has various beneficial effects on health.

4. Chia Seeds Are High in Quality Protein

Chia seeds contain a decent amount of [protein](https://authoritynutrition.com/how-much-protein-per-day/). By weight, they are about 14% protein, which is very high compared to most plants. They also contain a good balance of essential amino acids, so our bodies should be able to make use of the protein in them. Protein has all sorts of benefits for health. It is also the most weight loss friendly nutrient in the diet, by far. A high protein intake reduces appetite and has been shown to reduce obsessive thoughts about food by 60% and the desire for night time snacking by 50%. Chia seeds really are an [excellent protein source](https://authoritynutrition.com/20-delicious-high-protein-foods/), especially for people who eat little or no animal products. Bottom Line: Chia seeds are high in quality protein, much higher than most plant foods. Protein is the most weight loss friendly macronutrient and can drastically reduce appetite and cravings.

5. Due to The High Fiber and Protein Content, Chia Seeds Should be Able to Help You Lose Weight

Many health experts believe that chia seeds can help with weight loss. The fiber absorbs large amounts of water and expands in the stomach, which should increase fullness and slow the absorption of food. There have been several studies on [glucomannan](https://authoritynutrition.com/glucomannan/), a fiber that works in a similar way, showing that it can lead to weight loss. Then the protein in chia seeds could help to reduce appetite and food intake. Unfortunately, when the effects of chia seeds on [weight loss](https://authoritynutrition.com/how-to-lose-weight-as-fast-as-possible/) have been studied, the results have been rather disappointing. Although one study showed that chia seeds can reduce appetite, there was no significant effect on body weight. In a study on 90 overweight people, 50 grams of chia seeds per day for 12 weeks had no effect on body weight or health markers. Bottom Line: Chia seeds are high in protein and fiber, both of which have been shown to aid weight loss. However, the studies on chia seeds have not noted any effects on weight.

6. Chia Seeds Are High in Omega-3 Fatty Acids

Like flax seeds, chia seeds are very high in Omega-3 fatty acids.

In fact, chia seeds contain more Omega-3s than salmon, gram for gram. However… it’s important to keep in mind that the Omega-3s in them are mostly [ALA](https://authoritynutrition.com/3-types-of-omega-3/) (Alpha Linolenic Acid), which is not as beneficial as you may think. ALA needs to converted into the “active” forms, EPA and DHA, before it can be used by the body. Unfortunately, humans are inefficient at converting ALA into the active forms. Therefore, plant Omega-3s tend to be vastly inferior to animal sources like fish. Studies have shown that chia seeds (especially if they are milled) can increase blood levels of ALA and EPA, but not DHA…which is a problem. Because they don’t supply any [DHA](https://authoritynutrition.com/dha-docosahexaenoic-acid/) (the most important Omega-3 fat), I think chia seeds are overrated as an Omega-3 source. In order to get the DHA your body and brain desperately need… either eat fatty fish regularly, take fish oil, or take a [DHA supplement](https://authoritynutrition.com/omega-3-supplement-guide/) if you are vegan or vegetarian. Bottom Line: Chia seeds are very high in the Omega-3 fatty acid ALA. However, humans are not good at converting this into DHA, the most important Omega-3 fatty acid.

7. Chia Seeds May Improve Certain Blood Markers, Which Should Lower The Risk of Heart Disease and Type 2 Diabetes

Given that chia seeds are high in fiber, protein and Omega-3s, they should be able to improve metabolic health. This has been tested in several studies, but the results have been inconclusive. In two studies, a diet with chia seeds, [soy](https://authoritynutrition.com/is-soy-bad-for-you-or-good/) protein, oats and nopal, has been shown to lower LDL cholesterol and triglycerides, increase HDL cholesterol and [reduce inflammation](https://authoritynutrition.com/anti-inflammatory-diet-101/). Because these studies also used other ingredients, nothing can be concluded about the chia seeds themselves. Rat studies have also shown that chia seeds can lower triglycerides, raise HDL (the “good”) cholesterol and reduce inflammation, insulin resistance and belly fat. However, a study that looked at just chia seeds did not note any improvements. Overall… it is possible that chia seeds can improve these risk factors, but probably won’t have a major effect unless followed by other beneficial changes in the diet. Bottom Line: The effects on cholesterol levels and other risk factors is inconclusive. Some studies show an effect, others do not.

8. They Are High in Many Important Bone Nutrients

Chia seeds are high in several nutrients that are important for bone health. This includes [calcium](https://authoritynutrition.com/15-calcium-rich-foods/), phosphorus, magnesium and protein. The calcium content is particularly impressive… 18% of the RDA in a single ounce. Gram for gram, this is higher than most dairy products. Chia seeds may be considered an excellent source of calcium for people who don’t eat [dairy](https://authoritynutrition.com/is-dairy-bad-or-good/). Bottom Line: Chia seeds are high in calcium, magnesium, phosphorus and protein. All of these nutrients are essential for bone health.

9. Chia Seeds Can Cause Major Improvements in Type 2 Diabetics

The most successful application of chia seeds to date was in a study on type 2 diabetic patients. In this study, 20 diabetic patients received either 37 grams of chia seeds, or 37 grams of [wheat](https://authoritynutrition.com/foods/wheat/) bran, for 12 weeks. When they got the chia seeds, they saw improvements in several important health markers. Blood pressure went down by 3-6 mm/Hg and an inflammatory marker called [hs-CRP](http://www.docsopinion.com/health-and-nutrition/hscrp/) went down by 40%. A risk factor called vWF also decreased by 21%. There was also a small drop in blood sugar, but it wasn’t statistically significant.Given that chia seeds are high in fiber, it does seem plausible that they could help [reduce blood sugar spikes](https://authoritynutrition.com/15-ways-to-lower-blood-sugar/) after meals, but this needs to be confirmed in studies. Bottom Line: A study in type 2 diabetics showed that chia seeds can significantly lower blood pressure and a marker for inflammation.

10. Chia Seeds Can Improve Exercise Performance as Much as a Sports Drink

Legend has it that the Aztecs and Mayans used chia seeds to fuel performance back in the day. There is one recent study suggesting that this may be effective… In this study, 6 participants “[carb loaded](https://en.wikipedia.org/wiki/Carbohydrate_loading)” with either gatorade, or a mix of half gatorade/half chia seeds. Then they ran for an hour on a treadmill, followed by a timed 10 kilometer long run. There was no difference between the two groups. In other words, replacing half of the gatorade with chia seeds did not reduce the performance of the athletes, indicating that chia seeds were of some use. According to this study, chia seeds can help athletes “carb load” for endurance events, while increasing their intake of nutrients and decreasing their intake of [sugar](https://authoritynutrition.com/how-much-sugar-per-day/). However, I’d personally like to see some larger studies on this. Given that most of the carbs in chia seeds are fiber, it doesn’t make much sense that they could be used for carb loading. Bottom Line: One small study shows that chia seeds can partly replace gatorade as a way of carb loading for endurance athletes, but this needs to be studied more.

11. Chia Seeds Are Easy to Incorporate Into Your Diet

Okay, this last one is not a health benefit, but important nonetheless. Chia seeds are incredibly easy to incorporate into your diet. The seeds themselves taste rather bland, so you can add them to pretty much [anything](https://www.buzzfeed.com/rachelysanders/healthy-and-delicious-chia-seed-recipes). They also don’t need to be ground like flax seeds, which makes them much easier to prepare. They can be eaten raw, soaked in juice, added to porridges and puddings, or added to baked goods. You can also sprinkle them on top of cereal, yogurt, vegetables or rice dishes. Because of their ability to absorb both water and fat, they can be used to thicken sauces and even used as [egg](https://authoritynutrition.com/10-proven-health-benefits-of-eggs/) substitutes in recipes. They can also be mixed with [water](https://authoritynutrition.com/how-much-water-should-you-drink-per-day/) and turned into a gel. Adding chia seeds to recipes will dramatically boost the nutritional value. They do also seem to be well tolerated… but if you’re not used to eating a lot of fiber, then there is a possibility of digestive side effects if you eat too much at a time. A common dosage recommendation is 20 grams (about 1.5 tablespoons) of chia seeds, twice per day.

**Linseed (Flax seed)**

Linseeds are nutritional little powerhouses also known as flax seeds. These seeds come in two colours: a reddish brown and golden, from a nutritional point of view there is no difference between the two. Linseeds are high in omega 3 fats, which play a role in maintaining normal cholesterol levels. These are important fats that we can only get from our diet and most of us are not eating nearly enough of them.

Natural source of energy

High in protein and iron

Rich in fibre

Gluten free

Packed with essential vitamins and minerals such as Zinc, Calcium, Vitamin B1 & B6

Toasted linseeds are great for adding texture to your soups, salads and stir-fry’s and great for boosting your nutritional daily intake. Check out our range of [tasty seed mixes](http://www.munchyseeds.co.uk/shop/) or our [delicious recipe page](http://www.munchyseeds.co.uk/category/recipes/) for ideas on how to up your protein and fibre game with toasted Linseeds!

The power of Linseeds

* Protein found in Linseeds are packed with essential amino acids which are needed to grow muscle mass and maintain normal bones.
* Iron helps contribute to the normal formation of red blood cells & haemoglobin and aids in the reduction of tiredness & fatigue. Iron also contributes to normal cognitive function and to the normal function of the immune system. A 50g serving of linseed contains 20% of your daily RI for Iron.
* Fibre rich foods will help you feel fuller for much longer and help to reduce snacking on unhealthy foods throughout the day. 50g serving contains approximately 13.7g.
* Zinc  contributes to normal fertility and reproduction and contributes to the maintenance of hair, nails, skin, bones and vision. Zinc also contributes to normal cognitive function and to the normal function of the immune system. A 50g serving of linseed contains 22% of your daily RI for Zinc.
* Calcium is needed for the maintenance of normal bones and teeth. Calcium also contributes to normal muscle function. A 50g serving of linseed contains 16% of your daily RI for Calcium.
* Thiamin (Vitamin B1) contributes to the normal function of the heart. It also contributes to normal energy-yielding metabolism. A 50g serving of linseed contains 75% of your daily RI for Thiamin.
* Vitamin B6  contributes to normal red blood cell formation and to the reduction of tiredness and fatigue. A 50g serving of linseed contains 17% of your daily RI for Vitamin B6.
* Phosphorus  contributes to the maintenance of normal bones and teeth. A 50g serving of linseed contains 46% of your daily RI for Phosphorus.
* Magnesium is needed for normal muscle function and normal protein synthesis. Magnesium also contributes to a reduction of tiredness & fatigue and contributes to the maintenance of normal bones & teeth. A 50g serving of linseed contains 52% of your daily RI for Magnesium.
* Potassium  contributes to the maintenance of normal blood pressure. Potassium also contributes to normal muscle function. A 50g serving of linseed contains 20% of your daily RI for Potassium.
* **Hemp Seeds**
* Hemp seeds are the seeds of the hemp plant, *Cannabis sativa*. They are from the same species as cannabis (marijuana). However, hemp seeds contain only trace amounts of THC, the compound that causes the drug-like effects of marijuana. Hemp seeds are exceptionally nutritious and rich in healthy fats, protein and various minerals. Here are 6 health benefits of hemp seeds that are backed up by science.
* 1. Hemp Seeds Are Incredibly Nutritious
* Technically a nut, hemp seeds are very nutritious. They have a mild, nutty flavor and are often referred to as hemp hearts. Hemp seeds contain over 30% fat. They are exceptionally rich in two essential fatty acids, linoleic acid (omega-6) and alpha-linolenic acid (omega-3). They also contain gamma-linolenic acid, which has been linked with several health benefits. Hemp seeds are a great [protein](https://authoritynutrition.com/how-much-protein-per-day/) source, as more than 25% of their total calories are from high-quality protein. That is considerably more than similar foods like [chia seeds](https://authoritynutrition.com/11-proven-health-benefits-of-chia-seeds/) and [flaxseeds](https://authoritynutrition.com/foods/flaxseeds/), which provide about 16–18%.

Hemp seeds are also a great source of vitamin E and minerals such as phosphorus, potassium, sodium, magnesium, sulfur, calcium, iron and zinc. Hemp seeds can be consumed raw, cooked or roasted. Hemp seed oil is also very healthy, and has been used as a food/medicine in China for at least 3,000 years

Bottom Line: Hemp seeds are rich in healthy fats and essential fatty acids. They are also a great protein source and contain high amounts of vitamin E, phosphorus, potassium, sodium, magnesium, sulfur, calcium, iron and zinc.

2. Hemp Seeds May Reduce the Risk of Heart Disease

Heart disease is the number one killer worldwide. Interestingly, eating hemp seeds may reduce the risk of heart disease via several mechanisms. They contain high amounts of the amino acid arginine, which is used to produce [nitric oxide](https://en.wikipedia.org/wiki/Nitric_oxide) in the body. Nitric oxide is a gas molecule that makes the blood vessels dilate and relax, leading to lowered blood pressure and a reduced risk of heart disease. In one large study of more than 13,000 people, increased arginine intake was linked with decreased levels of [C-reactive protein (CRP)](https://en.wikipedia.org/wiki/C-reactive_protein). CRP is an inflammatory marker linked with heart disease. The gamma-linolenic acid found in hemp seeds has also been linked with reduced inflammation, which may decrease the risk of diseases like heart disease. Additionally, animal studies have shown that hemp seeds or hemp seed oil may reduce blood pressure, decrease the risk of blood clot formation and help the heart recover after a heart attack.

Bottom Line: Hemp seeds are a great source of arginine and gamma-linolenic acid, which have been linked with a reduced risk of heart disease.

3. Hemp Seeds and Oil May Benefit Skin Disorders

Fatty acids may affect immune responses in the body. This may have something to do with the balance of [omega-6 and omega-3](https://authoritynutrition.com/optimize-omega-6-omega-3-ratio/) fatty acids. Hemp seeds are a good source of polyunsaturated and essential fatty acids. They have about a 3:1 ratio of omega-6 to omega-3, which is considered in the optimal range. Studies have shown that giving hemp seed oil to people with eczema may improve blood levels of essential fatty acids. It may also relieve dry skin, improve itchiness and reduce the need for skin medication.

Bottom Line: Hemp seeds are rich in healthy fats. They have a 3:1 ratio of omega-6 to omega-3, which may benefit skin diseases. In some cases, this may provide relief from eczema and its uncomfortable symptoms.

4. Hemp Seeds Are a Great Source of Plant-Based Protein

About 25% of calories in hemp seeds come from protein, which is relatively high. In fact, by weight, hemp seeds provide amounts of protein similar to [beef](https://authoritynutrition.com/foods/beef/) and [lamb](https://authoritynutrition.com/foods/lamb/). 30 grams of hemp seeds, or 2–3 tablespoons, provide about 11 grams of protein. They are considered a [complete protein](https://en.wikipedia.org/wiki/Complete_protein) source, which means that they provide all the essential amino acids. Essential amino acids are not produced in the body and need to be gotten from the diet. Complete protein sources are very rare in the plant kingdom, as plants often lack the amino acid lysine. [Quinoa is](https://authoritynutrition.com/11-proven-benefits-of-quinoa/) another example of a complete, plant-based protein source. Hemp seeds contain significant amounts of the amino acids methionine and cysteine, as well as very high levels of arginine and glutamic acid. The digestibility of hemp protein is also very good — better than protein from many [grains](https://authoritynutrition.com/grains-good-or-bad/), nuts and [legumes](https://authoritynutrition.com/legumes-good-or-bad/).

Bottom Line: About 25% of the calories in hemp seeds come from protein. Hemp seeds contain all the essential amino acids, making them a complete protein source.

5. Hemp Seeds May Reduce Symptoms of PMS and Menopause

Up to 80% of women of reproductive age may suffer from physical or emotional symptoms caused by premenstrual syndrome (PMS)These symptoms are very likely caused by sensitivity to the hormone [prolactin](https://en.wikipedia.org/wiki/Prolactin). [Gamma-linolenic acid (GLA)](https://en.wikipedia.org/wiki/Gamma-Linolenic_acid), found in hemp seeds, produces [prostaglandin E1](https://en.wikipedia.org/wiki/Prostaglandin_E1), which reduces the effects of prolactin. In a study of women with PMS, taking one gram of essential fatty acids (including 210 mg of GLA) per day resulted in a significant decrease in symptoms. Other studies have shown that primrose oil, which is rich in GLA, may be highly effective in reducing symptoms for women who have failed other PMS therapies. It decreased breast pain and tenderness, depression, irritability and fluid retention associated with PMS. Because hemp seeds are high in GLA, several studies have indicated that hemp seeds may also help reduce the symptoms of menopause. Exactly how this works is unknown, but it has been suggested that the GLA in hemp seeds may help to regulate the hormone imbalances and inflammation associated with menopause.

Bottom Line: Hemp seeds may reduce symptoms associated with premenstrual syndrome (PMS), and may also positively affect symptoms of menopause.

6. Whole Hemp Seeds May Aid Digestion

[Fiber](https://authoritynutrition.com/why-is-fiber-good-for-you/) is an essential part of the diet and is linked with better digestive health.

Whole hemp seeds are a good source of both soluble (20%) and insoluble (80%) fiber. [Soluble fiber](https://authoritynutrition.com/fiber-can-help-you-lose-weight/) forms a gel-like substance in the gut. It is a valuable source of nutrients for the beneficial digestive bacteria, and may also reduce spikes in blood sugar and regulate cholesterol levels. Insoluble fiber adds bulk to fecal matter and may help food and waste pass through the gut. Consuming insoluble fiber has also been linked with a reduced risk of diabetes. However, de-hulled or shelled hemp seeds (also known as hemp hearts) contain very little fiber, because the fiber-rich shell has been removed.

Bottom Line: Whole hemp seeds contain high amounts of fiber, both soluble and insoluble, which benefits digestive health. De-hulled hemp seeds have had the fiber-rich shell removed, and therefore contain very little fiber.

Take Home Message

Although hemp seeds have not been popular until recently, they are an old staple food and people are now realizing their excellent nutritional value. They are very rich in healthy fats, high-quality protein and several minerals. However, hemp seed shells may contain trace amounts of [THC](https://en.wikipedia.org/wiki/Tetrahydrocannabinol) (< 0.3%), the active compound in marijuana. People who have been addicted to cannabis may want to avoid consuming hemp or hemp seeds in any form. Overall, hemp seeds are incredibly healthy. They might just be one of the few superfoods that are actually worthy of their reputation.

**Quinoa**

Quinoa is one of the world’s most popular health foods. Quinoa is gluten-free, high in protein and one of the few plant foods that contain all nine essential amino acids. It is also high in fiber, magnesium, B-vitamins, iron, potassium, calcium, phosphorus, vitamin E and various beneficial antioxidants. Here are 11 health benefits of quinoa:

1. Very nutritious

Quinoa is a [grain](https://authoritynutrition.com/grains-good-or-bad/) crop that is grown for its edible seeds. It is pronounced *KEEN-wah*. It technically isn’t a cereal grain, but a pseudo-cereal. In other words, it is basically a “seed” which is prepared and eaten similarly to a grain. Quinoa was an important crop for the Inca Empire back in the day. They referred to it as the “mother of all grains” and believed it to be sacred. It has been consumed for thousands of years in South America, although it only became trendy and reached “superfood status” a few years ago. These days, you can find quinoa and products made with it all over the world, especially in health food stores and restaurants that emphasize natural foods. There are three main types: white, red and black.

This is the [nutrient](https://authoritynutrition.com/foods/quinoa/) content in 1 cup (185 grams). This applies to cooked quinoa ([2](https://ndb.nal.usda.gov/ndb/foods)):

Protein: 8 grams.

Fiber: 5 grams.

Manganese: 58% of the RDA.

Magnesium: 30% of the RDA.

Phosphorus: 28% of the RDA.

Folate: 19% of the RDA.

Copper: 18% of the RDA.

Iron: 15% of the RDA.

Zinc: 13% of the RDA.

Potassium: 9% of the RDA.

Over 10% of the RDA for vitamins B1, B2 and B6.

Small amounts of calcium, B3 (niacin) and vitamin E.

This is coming with a total of 222 calories, with 39 grams of [carbs](https://authoritynutrition.com/how-many-carbs-per-day-to-lose-weight/) and 4 grams of fat. It also contains a small amount of [omega-3 fatty acids](https://authoritynutrition.com/omega-3-guide/). Quinoa is non-GMO, gluten-free and usually grown organically. Even though technically not a grain, it still counts as a whole grain food. NASA scientists have been looking at it as a suitable crop to be grown in outer space, mostly based on its high nutrient content, ease of use and how easy it is to grow ([3](http://ntrs.nasa.gov/archive/nasa/casi.ntrs.nasa.gov/19940015664.pdf)). The year 2013 was actually called “The International Year of Quinoa” by the United Nations (UN), based on its high nutrient value and potential to contribute to food security worldwide

2. Contains the plant compounds quercetin and kaempferol

The health effects of real foods go way beyond the vitamins and minerals we’re all familiar with. There are thousands of trace nutrients in there, some of which are extremely healthy. This includes interesting molecules called [flavonoids](https://en.wikipedia.org/wiki/Flavonoid), which are plant antioxidants that have been shown to have all sorts of beneficial effects on health. Two flavonoids that have been particularly well studied are quercetin and kaempferol, and they happen to be found in large amounts in quinoa. In fact, the quercetin content of quinoa is even higher than typical high-quercetin foods like cranberries. These important molecules have been shown to have [anti-inflammatory](https://authoritynutrition.com/anti-inflammatory-diet-101/), anti-viral, anti-cancer and anti-depressant effects in animal studies. By including quinoa in your diet, you will significantly increase your total intake of these (and other) important nutrients.

Bottom Line: It contains large amounts of flavonoids, including quercetin and kaempferol. These are potent plant antioxidants with numerous health benefits.

3. Very high in fiber, much higher than most grains

Another important benefit of quinoa is that it is [high in fiber](https://authoritynutrition.com/22-high-fiber-foods/). One study that looked at 4 varieties of quinoa found a range of between 10 and 16 grams of fiber, per every 100 grams. This equals 17-27 grams per cup, which is very high, more than twice as high as most grains. Boiled quinoa contains much less [fiber](https://authoritynutrition.com/why-is-fiber-good-for-you/), gram for gram, because it absorbs so much water. Unfortunately, most of the fiber is *insoluble* fiber, which doesn’t appear to have the same health benefits as *soluble* fiber. That being said, the soluble fiber content is about 2.5 grams per cup (or 1.5 grams per 100 grams), which is still decent. There are numerous studies showing that soluble fiber can help reduce blood sugar levels, lower cholesterol, increase fullness and help with weight loss.

Bottom Line: Quinoa is much higher in fiber than most grains, with one source finding 17-27 grams of fiber per cup.

4. Gluten-free and perfect for people with gluten intolerance

According to a [2013 survey](https://www.npd.com/wps/portal/npd/us/news/press-releases/percentage-of-us-adults-trying-to-cut-down-or-avoid-gluten-in-their-diets-reaches-new-high-in-2013-reports-npd/), about a third of people in the U.S. are currently trying to minimize or avoid gluten. A gluten-free diet can be healthy, as long as it is based on foods that are *naturally* gluten free. The problems arise when people eat “gluten free” foods made with refined starches instead. These foods are no better than their gluten-containing counterparts, because [gluten](https://authoritynutrition.com/what-is-gluten/) free junk food is still junk food. Many researchers have been looking at quinoa as a suitable ingredient in [gluten-free diets](https://authoritynutrition.com/gluten-free-diet-101/), for people who don’t want to give up staples like breads and pasta. Studies have shown that by using quinoa instead of typical gluten-free ingredients like refined tapioca, potato, corn and rice flour, it can dramatically increase the nutrient and antioxidant value of the diet.

Bottom Line: Quinoa is naturally free of gluten and using it instead of typical gluten-free ingredients can increase the antioxidant and nutrient value of a gluten-free diet.

5. Very high in protein, with all the essential amino acids

Protein is made out of amino acids. Some of them are termed “essential” because we can not produce them and need to get them from the diet. If a food contains all the essential amino acids, it is seen as a “complete” protein. The problem is that many plant foods are deficient in certain essential amino acids, such as lysine. However, quinoa is an exception to this, because it contains all the essential amino acids. For this reason, it is an excellent source of protein. It has both *more* and *better* protein than most grains. With 8 grams of quality [protein](https://authoritynutrition.com/how-much-protein-per-day/) per cup, quinoa is an excellent plant-based protein source for vegetarians and vegans.

Bottom Line: It is high in protein compared to most plant foods. It also contains all the essential amino acids that we need.

6. Has a low glycemic index, which is good for blood sugar control

The glycemic index is a measure of how quickly foods raise blood sugar levels. It is known that eating foods that are high on the glycemic index can stimulate hunger and contribute to obesity. Such foods have also been linked to many of the chronic, Western diseases that are so common today, like type 2 diabetes and heart disease. Quinoa has a glycemic index of 53, which is considered low. However, it’s important to keep in mind that it is still pretty high in carbs, so it is not a good choice for a [low-carb diet](https://authoritynutrition.com/low-carb-diet-meal-plan-and-menu/).

Bottom Line: The glycemic index of quinoa is around 53, which is considered low. However, it is still relatively high in carbohydrates.

7. High in important minerals like iron and magnesium

There are many nutrients in the modern diet that people tend to be lacking in. This is particularly true of some minerals, especially [magnesium](https://authoritynutrition.com/10-proven-magnesium-benefits/), potassium, zinc and (for women) iron. Interestingly, quinoa is very high in all 4 minerals. It is particularly [high in magnesium](https://authoritynutrition.com/10-foods-high-in-magnesium/), with one cup having about 30% of the RDA. The problem is that it also contains a substance called [phytic acid](https://authoritynutrition.com/phytic-acid-101/), which can bind these minerals and reduce their absorption. However, by soaking and/or sprouting the quinoa before cooking it, you can reduce the phytic acid content and make these minerals more bioavailable. Quinoa is also pretty high in [oxalates](https://authoritynutrition.com/oxalate-good-or-bad/), which reduce the absorption of calcium and can cause problems for certain individuals with recurring kidney stones.

Bottom Line: Quinoa is very high in minerals, but the phytic acid can partly prevent them from being absorbed. Soaking or sprouting degrades most of the phytic acid.

8. Has beneficial effects on metabolic health

Given the high amount of beneficial nutrients, it makes sense that quinoa could lead to improvements in metabolic health. Although this needs to be studied more thoroughly, I did find two studies (one in humans, the other in rats) that examined the effects on metabolic health. The human study found that using quinoa instead of typical gluten-free breads and pastas significantly reduced blood sugar, insulin and triglyceride levels. The rat study found that adding quinoa to a diet high in [fructose](https://authoritynutrition.com/why-is-fructose-bad-for-you/) almost completely inhibited the negative effects of fructose.

Bottom Line: Two studies, one in humans and the other in rats, show that quinoa can improve metabolic health. This includes lower blood sugar and triglyceride levels.

9. Very high in antioxidants

Quinoa also happens to be very high in antioxidants. Antioxidants are substances that neutralize free radicals and are believed to help fight aging and many diseases. One study looked at antioxidants in 10 foods: 5 cereals, 3 pseudocereals and 2 legumes. Quinoa had the highest antioxidant content of all 10. Allowing the seeds to [sprout](https://en.wikipedia.org/wiki/Sprouting) seems to increase the antioxidant content even further.

Bottom Line: Quinoa appears to be very high in antioxidants, which are increased even further after the seeds are sprouted.

10. May help you lose weight

In order to [lose weight](https://authoritynutrition.com/how-to-lose-weight-as-fast-as-possible/), we need to take in fewer calories than we burn. It is known that certain properties of foods can facilitate this process, either by boosting metabolism (increasing calories out) or reducing appetite (lowering calories in).

Interestingly, quinoa has several such properties. It is [high in protein](https://authoritynutrition.com/20-delicious-high-protein-foods/), which can both [increase metabolism](https://authoritynutrition.com/10-ways-to-boost-metabolism/) and reduce appetite significantly. The high amount of fiber should also help to increase feelings of fullness, making you [eat fewer calories](https://authoritynutrition.com/how-many-calories-per-day/) overall. The fact that quinoa has a low glycemic index is another important feature, but choosing such foods has been linked to reduced calorie intake. Although there is currently no study that looks at the effects of quinoa on body weight, it seems intuitive that it could be a useful part of a healthy weight loss diet. Start Shortcoder content noptimize /noptimize End Shortcoder content

Bottom Line: Quinoa is high in fiber, protein and has a low glycemic index. These properties have all been linked to weight loss and improved health.

11. Easy to incorporate into the diet

The last one is not a health benefit, but still incredibly important. It is the fact that quinoa is very easy to incorporate into your diet. It is also tasty and goes well with many foods. Depending on the type of quinoa, it can be important to rinse it with [water](https://authoritynutrition.com/how-much-water-should-you-drink-per-day/) in order to get rid of saponins, which are found on the outer layer and can have a bitter flavor. However, some brands have already been rinsed, so this may not be necessary. You can buy quinoa in most health food stores and many supermarkets.

It can be ready to eat in as little as 15-20 minutes: Put 2 cups of water in a pot, turn up the heat. Add 1 cup of raw quinoa, with a dash of [salt](https://authoritynutrition.com/salt-good-or-bad/). Boil for 15-20 minutes. Eat.

It should now have absorbed most of the water and gotten a fluffy look. If done right, it should have a mild, nutty flavour and a satisfying crunch. Then there are dozens of other delicious ways to use quinoa. Why you should try quinoa - At the end of the day, quinoa is one of the [healthiest](https://authoritynutrition.com/50-super-healthy-foods/) and [most nutritious](https://authoritynutrition.com/11-most-nutrient-dense-foods-on-the-planet/) foods on the planet. That is a fact.

**Spirulina**

Spirulina is incredibly good for you. It is loaded with nutrients that can have powerful effects on your body and brain. Here are 10 evidence-based health benefits of spirulina.

1. Spirulina is Extremely High in Many Nutrients

Spirulina is an organism that grows in both fresh and salt water. It is a type of bacteria called [cyanobacterium](https://en.wikipedia.org/wiki/Cyanobacteria), which is often referred to as blue-green algae. Just like plants, cyanobacteria can produce energy out of sunlight, via the process called [photosynthesis](https://en.wikipedia.org/wiki/Photosynthesis). Spirulina was consumed by the Aztecs back in the day, but became popular again when NASA proposed that it could be grown in space and used by astronauts. A standard daily dose of spirulina is 1-3 grams, but doses of [up to 10 grams](http://examine.com/supplements/Spirulina/) per day have been used effectively.

It is actually quite amazing how nutritious it is.

A single tablespoon (7 grams) of dried spirulina powder contains ([2](https://ndb.nal.usda.gov/ndb/search)):

Protein: 4 grams.

Vitamin B1 (Thiamin): 11% of the RDA.

Vitamin B2 (Riboflavin): 15% of the RDA.

Vitamin B3 (Niacin): 4% of the RDA.

Copper: 21% of the RDA.

Iron: 11% of the RDA.

It also contains decent amounts of magnesium, potassium and manganese, and small amounts of almost every other nutrient that we need. This is coming with only 20 [calories](https://authoritynutrition.com/how-many-calories-per-day/), and 1.7 grams of digestible [carbohydrate](https://authoritynutrition.com/how-many-carbs-per-day-to-lose-weight/). Gram for gram, this means that spirulina may *literally* be the single most nutritious food on the planet. A tablespoon of spirulina contains a small amount of fat (around 1 gram), including both omega-6 and omega-3 fatty acids in about a 1.5:1 [ratio](https://authoritynutrition.com/optimize-omega-6-omega-3-ratio/). The quality of the protein in spirulina is considered excellent, comparable to [eggs](https://authoritynutrition.com/10-proven-health-benefits-of-eggs/). It contains all the essential amino acids that we need. It is often claimed that spirulina contains vitamin B12, but this is false. It contains pseudovitamin B12, which has not been shown to be effective in humans.

Bottom Line: Spirulina is a type of blue-green algae that grows in both salty and fresh water. It may be the single most nutrient-dense food on earth.

2. Spirulina Has Powerful Antioxidant and Anti-inflammatory Properties

Oxidative damage can harm our DNA and cells. This damage can drive chronic inflammation, which contributes to cancer and other diseases. Spirulina is a fantastic source of [antioxidants](https://authoritynutrition.com/antioxidants-explained/), which can protect against oxidative damage. The main active component is called [phycocyanin](https://en.wikipedia.org/wiki/Phycocyanin). This antioxidant substance also gives spirulina its unique blue-green color. Phycocyanin can fight free radicals and inhibit production of inflammatory signalling molecules, providing impressive antioxidant and anti-inflammatory effects.

Bottom Line: Phocyanin is the main active compound in spirulina. It has powerful antioxidant and anti-inflammatory properties.

3. Spirulina Can Lower LDL and Triglyceride Levels

Heart disease is currently the world’s biggest killer. It is known that many measurable factors, termed risk factors, are linked to an increased risk of heart disease. As it turns out, spirulina has been shown to have beneficial effects on many of them. For example, it can lower total cholesterol, LDL cholesterol and triglycerides, while raising HDL (the “good”) cholesterol. In a study of 25 people with type 2 diabetes, 2 grams per day of spirulina significantly improved these markers. Another study in people with high cholesterol found that 1 gram of spirulina per day lowered triglycerides by 16.3% and LDL by 10.1%. Several other studies have shown favorable effects, but with higher doses of 4.5-8 grams of spirulina per day.

Bottom Line: Studies have shown that spirulina can lower triglycerides and LDL cholesterol, and sometimes may raise HDL (the “good”) cholesterol.

4. Spirulina Protects LDL Cholesterol From Becoming Oxidized

Fatty structures in the body are susceptible to oxidative damage. This is known as [lipid peroxidation](https://en.wikipedia.org/wiki/Lipid_peroxidation), which is known to be a key driver of many serious diseases. For example, one of the key steps in the pathway towards heart disease is LDL [lipoproteins](https://authoritynutrition.com/diet-cholesterol-and-lipoproteins-explained/) in the blood becoming oxidized. Interestingly, the antioxidants in spirulina appear to be particularly effective at reducing lipid peroxidation. This has been shown numerous times, in both human and animal studies. In a study of 37 individuals with type 2 diabetes, 8 grams of spirulina per day significantly reduced markers of oxidative damage. It also increased levels of antioxidant enzymes in the blood.

Bottom Line: Fatty structures in the body can become oxidized, which drives the progression of many diseases. The antioxidants in spirulina can help prevent this from happening.

5. Spirulina Appears to Have Anti-Cancer Properties, Especially Against Oral Cancer

Some evidence suggests that spirulina can have anti-cancer properties. For example, some research in test animals shows that it can reduce cancer occurrence and tumor size.

Spirulina has been particularly well studied with regard to [oral cancer](https://en.wikipedia.org/wiki/Oral_cancer), which is cancer of the mouth. One study looked at the effects of spirulina on 87 people from India with precancerous lesions called [OSMF](https://en.wikipedia.org/wiki/Oral_submucous_fibrosis) in the mouth. After using 1 gram per day for 1 year, 45% of the spirulina group had a complete regression of lesions in the mouth, compared to only 7% in the control group. When they stopped taking the spirulina, almost half of the responders developed these lesions again the following year. In another study of 40 subjects with OSMF precancerous lesions, 1 gram of spirulina per day led to greater improvement in symptoms than the drug [Pentoxyfilline](https://en.wikipedia.org/wiki/Pentoxifylline) ([22](http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3919363/)).

Bottom Line: Spirulina may have some anti-cancer properties, especially against a type of precancerous lesion called OSMF (oral submucous fibrosis).

6. Studies Show That it May Reduce Blood Pressure

High blood pressure is an important driver of many killer diseases. This includes heart attacks, strokes and chronic kidney disease. While 1 gram of spirulina is ineffective, a dose of 4.5 grams per day has been shown to reduce blood pressure in individuals with normal blood pressure levels. This is thought to be driven by an increased production of [nitric oxide](https://en.wikipedia.org/wiki/Nitric_oxide), a signalling molecule that helps the blood vessels relax and dilate.

Bottom Line: In one study, a higher dose of spirulina has been shown to lead to lower blood pressure levels, a major risk factor for many diseases.

7. Spirulina Improves Symptoms of Allergic Rhinitis

Allergic rhinitis is characterized by inflammation in the nasal airways. It is triggered by environmental allergens, such as pollen, animal hair or even [wheat dust](https://authoritynutrition.com/foods/wheat/). Spirulina is a popular alternative treatment for symptoms of [allergic rhinitis](https://en.wikipedia.org/wiki/Allergic_rhinitis), and there is evidence that it can be effective. In one study of 127 people with allergic rhinitis, 2 grams per day dramatically reduced symptoms like nasal discharge, sneezing, nasal congestion and itching.

Bottom Line: Spirulina supplements have been shown to be very effective against allergic rhinitis, helping to reduce various symptoms.

8. Spirulina May be Effective Against Anemia

There are many different forms of [anemia](http://www.hematology.org/Patients/Anemia/). The most common one is characterized by a reduction in hemoglobin or red blood cells in the blood. Anemia is fairly common in the elderly, leading to prolonged feelings of weakness and fatigue. In a study of 40 older people with a history of anemia, spirulina supplementation increased the hemoglobin content of red blood cells. Immune function also improved. However, this is just one study, and more research is needed before any recommendations can be made.

Bottom Line: One study shows that spirulina may be effective against anemia in the elderly. More research is needed.

9. Muscle Strength and Endurance May Improve

Exercise-induced oxidative damage is a major contributor to muscle fatigue. Certain plant foods have antioxidant properties that can help athletes and physically active individuals minimize this damage. Spirulina appears to be beneficial, with some studies showing improved muscle strength and endurance. In two studies, spirulina was shown to enhance endurance, significantly increasing the time it took for people to become fatigued. Another study in college athletes found that spirulina supplementation increased muscle strength, but did not have any effect on endurance.

Bottom Line: Some studies have shown that spirulina supplementation can enhance endurance, and one study shows that it can increase muscle strength.

10. Spirulina May Help With Blood Sugar Control

Animal studies have shown that spirulina can significantly lower blood sugar levels. In some cases, it has outperformed popular diabetes drugs, including Metformin. There is also some evidence that spirulina can be effective in humans. In a study of 25 patients with type 2 diabetes, 2 grams of spirulina led to an impressive reduction in blood sugar levels. HbA1c, a marker for long-term blood sugar levels, decreased from 9% to 8%, which is substantial. Studies estimate that a 1% reduction in this marker can lower the risk of diabetes-related death by 21%. However, this study was small and only lasted for 2 months, so take this with a grain of salt.

11. Anything Else?

Spirulina may also have other beneficial effects, such as helping to “detoxify” the heavy metal arsenic from the body. At the end of the day, spirulina is incredibly healthy. It is one of the few “superfoods” that are actually worthy of that term.

**Wheatgrass**

Wheatgrass juice has been hyped for years as a powerful superfood. It was even a staple in the diets of the ancient Egyptians and Mesopotamian civilizations. Contrary to its name, though, there’s no wheat in wheatgrass—it’s simply the young grass from the wheat plant (Triticum aestivum). It grows outdoors throughout the U.S. and Europe, but it can also be grown indoors on trays. The benefits of wheatgrass juice are seemingly endless ([1](http://www.webmd.com/food-recipes/wheatgrass)). Wheatgrass was first popularized in the 1930s by American agricultural chemist Dr. Charles Schnabel.Schnabel and his research team found that wheatgrass was more effective at improving the health of livestock than other nutrient-dense vegetables such as alfalfa sprouts, broccoli, and spinach. In the 1950s, Ann Wigmore, a whole-foods advocate and nutritionist, began juicing wheatgrass. She then founded an institute and began to educate others about plant-based foods.

Nutritional Analysis of Wheatgrass

What is it about wheatgrass? For starters, wheatgrass is loaded with nutrients, especially chlorophyll (which is what gives dark leafy greens their color). In fact, it contains up to 70% chlorophyll.



Wheatgrass is also a great source of many minerals, vitamins, and liver enzymes. It’s thought to contain 98 of the 102 elements found in soil, including iron, magnesium, selenium, calcium, potassium, zinc, copper, enzymes, and 19 amino acids. Wheatgrass also contains vitamin A, vitamin C, vitamin E, vitamin K, and B vitamins including B1, B2, B3, B5, B6, and B12.

The following is a comprehensive wheatgrass nutrition chart for a one-ounce serving (or, a shot). It will give you further detail about some of the nutrients contained within wheatgrass.

|  |  |  |
| --- | --- | --- |
| Nutrient | Amount | Daily Value |
| Calories | 120 | 6% |
| Carbohydrates | 16 g | 5% |
| Fiber | 8 g | 32% |
| Protein | 8 g | 16% |
| Vitamin A | 12,000 IU | 240% |
| Vitamin C | 56 mg | 93% |
| Vitamin E | 2,560 mg | 12,800% |
| Vitamin K | 280 mcg | 350% |
| Vitamin B1 | 88 mg | 5,867% |
| Vitamin B2 | 2,080 mg | 122,353% |
| Vitamin B3 | 2,016 mg | 10,080% |
| Vitamin B5 | 288 mg | 2,880% |
| Vitamin B6 | 312 mg | 15,600% |
| Vitamin B12 | 0.4 | mcg 7% |
| Choline | 40 mg | N/A |
| Calcium | 120 mg | 12% |
| Iron | 64 mg | 356% |
| Magnesium | 31.2 | mg 8% |
| Phosphorus | 112 | mg 11% |
| Potassium | 824 | mg 24% |
| Zinc | 496 mg | 3,307% |
| Copper | 13.6 mg | 680% |
| Manganese | 1,120 mg | 56,000% |
| Selenium | 28 mcg | 40% |

What Are the Benefits of Wheatgrass Juice?

As illustrated in the nutrition chart, one shot of wheatgrass is loaded with nutrition—it’s no wonder that there are several health benefits of wheatgrass! Here are 14 wheatgrass shot benefits you should keep in mind:

1. May Help Prevent Cancer

Cancer cannot thrive in a well-oxygenated environment. Wheatgrass can help prevent cancer by cleaning the blood. A study published in the Journal of Experimental and Clinical Cancer Research in 2011 suggests that fermented wheatgrass extract exerted significant anti-tumor activity ([2](http://jeccr.biomedcentral.com/articles/10.1186/1756-9966-30-42)). Also, a preliminary study published in the journal Nutrition and Cancer in 2007 found that wheatgrass juice benefits breast cancer patients by reducing some of the harmful effects of chemotherapy ([3](http://www.tandfonline.com/doi/abs/10.1080/01635580701308083)). The study included 60 breast cancer patients on chemotherapy.

2. Treats Skin Diseases and Wounds

Wheatgrass is known to treat several types of diseases and conditions associated with the skin, including eczema, psoriasis, and sunburns. It can also treat acne and skin wounds by quickly regenerating skin cells. You can rub a frozen wheatgrass juice cube across scars or damaged skin, or dab the affected area using a cotton ball dipped in wheatgrass juice, and let it sit for about five minutes before rinsing and drying the area.

3. Weight Loss and Food Cravings

Wheatgrass benefits weight loss as well. Wheatgrass juice or supplements can prevent weight gain by managing the thyroid gland, which is important in weight maintenance. The many nutrients found in wheatgrass also help you avoid cravings. Take a wheatgrass shot in the morning on an empty stomach to prevent overeating throughout the day.

4. Benefits Digestive Conditions

Wheatgrass juice benefits those with digestive disorders due to its enzyme, amino acid, and vitamin B content. It can help treat ulcers, irritable bowel syndrome, heartburn, and indigestion. A study published in the Scandinavian Journal of Gastroenterology in 2002 also shows that wheatgrass juice can ease the symptoms of [ulcerative colitis](http://www.doctorshealthpress.com/health-news/vinegar-may-treat-ulcerative-colitis-says-study).

5. Hair Health

There are also wheatgrass benefits for hair. Wheatgrass is thought to reverse gray hair due to its catalase content and other antioxidants, slowing the aging process. You can do this by drinking a wheatgrass shot daily, or by adding wheatgrass powder to a smoothie. You can even turn wheatgrass into an effective hair conditioner by juicing it. It’s also good for dry hair and dandruff.

6. Reduces Blood Disorders

In a study published in the journal Indian Pediatrics ([5](http://www.indianpediatrics.net/july2004/july-716-720.htm)) in 2004 involving patients with thalassemia, a blood disorder, researchers found that 100 milliliters of wheatgrass juice lowered blood transfusion requirements. On top of that, wheatgrass can increase the amount of oxygen in the blood, which stimulates blood circulation.

7. Improves Immunity and Energy

Wheatgrass is a great energy and immune booster, and it does this by increasing your red blood cell count. The chlorophyll in wheatgrass also helps deliver more oxygen to the blood, which prevents a weak immune system. Low energy is also linked to nutritional deficiencies, so taking wheatgrass will help eliminate general fatigue and tiredness.

8. Treats Arthritis

It’s also believed that wheatgrass can help treat arthritis due to its chlorophyll content. Chlorophyll is known to fight inflammation linked with joint diseases and other conditions.

9. Liver Cleanser

Wheatgrass is known for its liver detoxification effects. It helps protect the liver from oxidative stress, and cleanses it of foreign substances such as heavy metals.

10. Relieves Stress and Depression

The B vitamins in wheatgrass can help you overcome anxiety and depression. Wheatgrass also helps prevent iron deficiency, which is linked to depression.

11. Natural Deodorant

Wheatgrass can be used as a natural deodorant. Wheatgrass and chlorophyll both act as natural deodorizers, and taking wheatgrass with other leafy greens can neutralize body odor.

12. Increases Fertility and Libido

Regular wheatgrass supplementation can increase libido and stamina. A compound found in wheatgrass called P4D1 can impact sperm cells and DNA, and increase fertility as a result.

13. Benefits Alzheimer’s Disease Patients

Wheatgrass can benefit those who suffer from Alzheimer’s disease. The chlorophyll in wheatgrass fuels the body with oxygen, and oxygen is especially vital for the brain. In a study published in the Asian Pacific Journal of Tropical Medicine ([6](http://www.sciencedirect.com/science/article/pii/S1995764514602467)) in 2014, researchers found that wheatgrass powder had benefits in the treatment of Alzheimer’s disease through its antioxidant properties. Wheatgrass significantly reduced oxidative stress by enhancing the levels of catalase and superoxide dismutase in rats.

14. Lowers Cholesterol

Wheatgrass is also a potent remedy for heart health. In a study published in the journal Acta Poloniae Pharmaceutica ([7](http://www.ptfarm.pl/pub/File/Acta_Poloniae/2011/2/291.pdf)) in 2011, researchers suggested that fresh wheatgrass juice can benefit those with atherosclerosis by lowering cholesterol; this also means that wheatgrass can also help manage high cholesterol levels.

How to Grow Wheatgrass

Besides juicing wheatgrass, you can also get it in tablets, powders, and frozen juices, but you can also grow it yourself ([8](http://hippocratesinst.org/how-to-grow-wheatgrass-2)). First rinse the seeds and then them for nearly 24 hours. After they have begun to sprout, plant the seeds on top of some soil in a two-inch-deep tray. Cover the seeds and keep them from drying out for the next three days. During these three days of growth, you will water them, heavily, once in the morning. On the fourth day, the roots should be taking over the soil. You will have to water heavily once a day while keeping the plant shaded from the sun. Begin harvesting once a blade splits into two. The average growing time is about seven to 12 days, and once harvested they can be stored in the refrigerator for about seven to 10 days.

Possible Side Effects of Wheatgrass

Are wheatgrass side effects common? It’s important to understand that wheatgrass is very potent, and too much wheatgrass can cause mild nausea or headaches, especially when the person begins drinking wheatgrass on a regular basis. That said, some people attribute these headaches and nausea to the detoxifying effects of wheatgrass. While wheatgrass has benefits, the side effects are as follows, if consumed in excessive amounts:

Allergic reactions such as throat swelling and hives

Diarrhea

Wheatgrass growing conditions and improper care may also lead to the development of mold, which can potentially spoil it, depending on the type of mold.

Quick Facts about Wheatgrass

What else should you know about wheatgrass juice benefits? Here are a few:

* Wheatgrass can also be used as a mouthwash. Keeping wheatgrass in the mouth for about five minutes will help eliminate toxins, alleviate toothaches, prevent tooth decay, and treat bleeding gums.
* Always start slowly when incorporating wheatgrass juice in your diet. Begin with one ounce a day, and gradually build up to two ounces.
* Wheatgrass should also be consumed on an empty stomach, or with vegetables and fruit as part of a freshly squeezed juice. You may feel nauseated if wheatgrass is taken after a meal.