



**THE**  
**HEALTH BENEFITS OF**  
*Chlorella*

## DISCLAIMER

The information presented here is intended for educational purposes only. It should not be taken as a substitute for properly informed medical advice. Nothing here can be construed as diagnosing or treating any health condition or illness. Please consult your doctor or the appropriate licensed practitioner before undertaking any course of action related to your health.

Chlorella is a single-celled, green algae that has a super-food status because of its high nutrient and protein content. Chlorella contains phytonutrients, potassium, beta-carotene, chlorophyll, B-complex vitamins, biotin, amino acids, phosphorus and magnesium. It does amazing things like: boosts your immune system, helps brain health, aids in weight loss, fights cancer and even detoxifies your body of heavy metals that have accumulated in your body over the years.

Chlorella is also notable as it is better for you than all of the super-foods we now know and love. Chlorella is such a great source of protein that some vegetarians and vegans use it as their main protein source. It has more protein than soy and kale and is being looked at by researchers as a potential new food source to feed the ever-growing human population on earth. It reduces carbon-dioxide five times better than other

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plants, improving air quality. It takes up 25% less area to grow than typical crops and grows 10 times faster than any land plant. It has the potential to feed the world, improve the environment, and has numerous health benefits. No wonder the scientific community is ramping up studies on how to increase the production of this dynamic algae.

### **Detoxifies Heavy Metals**

We all have heavy metals stored in our body tissues, as a consequence of the environment in which we live, eat, drink and breathe. It is possible, however, to detoxify your body from some of these heavy metals such as cadmium, uranium, mercury and lead.

Are you wondering if you have mercury and other heavy metal toxins in your body? If you eat fish, live in an industrialized area with air pollution, have been immunized or have silver (mercury) fillings, there is a good chance you have mercury stored in your body. The most predominant form of mercury poisoning comes from fatty fish such as tuna, mackerel, shark and swordfish. 75% of human exposure to mercury comes from fish.

Mercury is not the only dangerous heavy metal that accumulates in the human body. Cadmium is another common pollutant we are exposed to. A study was published in

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2009 by the National Institutes of Health that looked at how the heavy metal cadmium can be reduced in rats.

Rats were exposed to cadmium so that it accumulated in their blood, kidneys, liver and small intestines. One group of rats was given chlorella and a control group was not. The group given chlorella showed less cadmium absorption, the cadmium was being flushed out of their bodies.

Having chlorella in your diet can prevent these heavy metals from being absorbed into your organs and tissues at all. Chlorella is a chelator of heavy metals. Chelating agents like chlorella bind themselves to heavy metals and flush themselves out of your system.

The best daily dose of chlorella, to fight against heavy metal poisoning, is 1 to 4 grams a day. Talk to your doctor or naturopath to see what is best for you individually.

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In 2011 a study was published by the National Institutes of Health in which mice were given chlorella to see if it could increase the amount of methyl-mercury (a bioaccumulative toxin) excreted out of the body. There was a significant reduction of methyl-mercury from the blood, brains and kidneys of the mice.

Two organisms that are amazing at getting rid of mercury from the body are *Chlorella pyrenoidosa* and *Chlorella vulgaris*. They absorb mercury right into their cell walls. These 2 types of chlorella are good for pulling mercury from ligaments, bone, muscles and connective tissue. Most mercury comes out of the body through your stool and it is chlorella that gets the mercury into your stool.

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It is safe to assume that all humans on earth have some form or other of heavy metal contamination which has bioaccumulated in the body tissues, no matter where you live. Although “detoxing” has become a trendy buzz-word, using chlorella to flush out toxins does have scientific researching backing it and is worth consideration.

### **Weight Loss**

Preliminary research on chlorella is showing that it can assist with weight loss. It seems like a viable option now because such research has been done not only on animals but humans as well. You do not always want to base your supplement choices on what has worked for mice.

A Japanese study was published in 2008 in the Journal of Medicinal Food. The goal of the study was to find out the effects chlorella has on people with high risk factors of obesity, high cholesterol and diabetes.

The test was on 17 human participants, who were at risk of lifestyle-related diseases, during the course of 16 weeks. The test also included 17 healthy participants with no known health conditions as a control group. Both groups were administered chlorella. Both groups experienced body fat reduction, improved cholesterol and blood sugar levels.

Another study was done in Korea in 2009 that showed that chlorella can actually kill fat

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cells. It enhances weight loss by shrinking fat cells and cutting down on the amount of fat each cell holds.



Studies have shown that, combined with a healthy diet plus exercise, chlorella supplementation can boost weight loss by double. As a booster to a weight loss program, chlorella adds protein, vitamins and minerals. Chlorella has the best fat to protein ratio for weight loss. This is significant because animal sources of protein contain a great deal of the bad fats.

Chlorella helps stop food cravings because it is nutritionally dense and very low in calories. When you have food cravings it is usually because you are craving nutrition. By filling yourself up with something so healthy it will reduce the amount of food you



want.

## **Fights Cancer**

According to preliminary studies, chlorella can be used to prevent cancer. Chlorella boosts Glutathione which is a powerful antioxidant that turbo-charges vitamins C and E. Glutathione scavenges the body for cancer-causing free radicals, regenerates itself after processing free radicals and then goes back for more.

When levels of glutathione are high, the body can fight stress and decrease the build-up of carcinogens within cells. Toxic build-up can be removed with proper dosing of chlorella in the diet, since chlorella binds to toxins with a fibrous mucopolysaccharide membrane. Maintaining high levels of glutathione, a master-antioxidant, can help you age well and prevent disease.

Chlorella is a good source of chlorophyll. Chlorophyll helps prevent colon and liver cancer. Free radicals cause oxidative stress, which causes various diseases.

Chlorophyll contains essential vitamins that kill these free radicals. Because chlorella contains a combination of folic acid, vitamin C, vitamin K and vitamin B-1, B-2, and B-12, it is a powerful antioxidant.

Chlorophyll has been discovered to be a physiochemical that can limit tumorigenesis (the formation of tumors). Cancer causing carcinogens can be stopped from building up

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in the central nervous system with the use of chlorella.

For people with cancer, chlorella increases white blood cell counts and stimulates the immune system. Chlorella also rids the body of mold, industrial pollutants and many other cancer-causing toxins from the body. Cancer-causing carcinogens can be stopped from building up in the central nervous system with the use of chlorella.

Here are some more ways chlorella fights cancer:

- Chlorella is full of carotenoids, which fight oxidation.
- Chlorella slows the creation of the blood vessels needed by cancer cells to grow.
- Glioma and liver cancer patients show an improvement in survival time by taking chlorella.
- Chlorella reduces the production of cervical cancer cells. Cervical cancer cell activity is reduced as the dose of chlorella is increased.
- New research is being done to see if chlorella can be used topically to prevent or treat skin cancer.
- Chlorella protects against cancer because it is high in minerals such as lutein and

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vitamin D.

- Chlorella has anti-tumor properties.

Also, the detoxifying properties of chlorella gets rid of heavy metals and toxins that cause cancer. If cancer does develop, chlorella boosts T cell production which enhances the body's ability to fight abnormal cells.

Chlorella is not a stand-alone treatment to prevent or treat cancer, so consider it to be a tool in your tool-box that also includes healthy living and modern medicine. Enough human studies have not been done on chlorella to prove 100% that it is effective. Studies are preliminary so far so consult with your doctor about all cancer prevention and treatment options.

## **Increases aerobic endurance**

In an animal study, a group of mice were given chlorella powder. After 14 days on the diet, mice on the chlorella-supplements were able to swim much longer compared to mice not given supplements.

Researchers then wanted to find out if chlorella supplements would improve human athletic performance as well. A study was done on young adults to see if chlorella would improve their peak oxygen uptake during cycling. Peak oxygen uptake while cycling was

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greatly improved in participants on chlorella during the 4 week trial, compared to the placebo group. The results clearly show that a chlorella supplement can improve aerobic endurance.



## **Immune System**

Chlorella can have some stunning effects on the human immune system that can help the average person or can assist elite athletes. Chlorella boosts your ability to fight off cold and flu, fights tumors and increases white cell production. When supplementing your diet with chlorella, you can rest easier, knowing that you have that extra protection against disease.

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Chlorella can improve the lowered immunity athletes sometimes get during intense training. Secretory IgA is the main immunoglobulin in mucus secretions. Secretory IgA is much higher in athletes who take chlorella, which drastically reduces chances of catching cold and flu. The intestinal cells produce about 2 - 3 grams every day. It is basically mucus in the gut, which is the first line of defense against pathogens like viruses, fungi, bacteria, parasites and toxins.

A Korean study showed that chlorella supplementation increased the NK cell activity and cell-induced cytokines. NK cells are Natural Killer cells. They are a type of white blood cell and are a big component of the immune system. Chlorella stimulates the immune system by boosting NK cell activity. NK cells are known for their toxicity towards tumor cells.

In 2012 a study was published in the *Nutrition Journal* that NK cell activity increased after just 8 weeks of chlorella intake. Healthy individuals were studied at the Yonsei University in South Korea. Chlorella supplements were given to participants to measure their immune systems responses. The result of the study proved that the Natural Killer (NK) cell activity was boosted.

You produce more anti-bodies when taking chlorella, which ward off foreign invaders in the body.

Animal studies on the effects of chlorella have been going on for much longer than

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human studies. Tests on mice have shown that the immune systems of mice have better ability to fight off both viruses and bacteria while being supplemented with chlorella.

It is amazing that such a tiny algae can be a champion of the human immune system.

Use it as your secret weapon in the short-term for fighting off cold and flu. Use it for the long-term benefits such as warding off cancer and fighting tumors.

### **Heart Disease**



Researchers have done a study on rodents to see what effects chlorella can have on

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preventing heart disease. Rats and hamsters were fed a high fat diet. Their HDL and LDL levels, total cholesterol and fasting triglycerides were tested. One group was fed chlorella and one control group was not.

The group given chlorella had decreased levels of triglycerides, LDL cholesterol and total cholesterol. Researchers believe that, because of the improved cholesterol/HDL ratios, chlorella supplementation might reduce the risk of coronary heart disease. It might also prevent hyperlipidemia and atherosclerosis in humans.

A meta-analysis on a number of separate, but similar, studies was undertaken by researchers in Iran on the effects of chlorella in the human diet, with studies as recent as 2017. The main goal was to find out what effects chlorella supplementation had on human cardiovascular risk factors.

Researchers looked at studies that had information on the usual indicators of cardiovascular disease risk such as blood pressure, fasting blood glucose, BMI and lipid profile.

Overall, the meta-analysis looked at 19 studies that were made up of 797 participants from Korea, Japan and Iran. The majority of the studies came from Japan.

Researchers found an undeniable link between chlorella supplementation and the reduction of total cholesterol. Researchers believe that it is due to the bio-active

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compounds that help the metabolism of lipids. The fibers in chlorella attach to digested fat and cut down on the absorption of cholesterol in the intestine. This allows sterols, like cholesterol to be flushed out of the body in feces.

Interestingly, the study also showed that the green algae was more effective on unhealthy participants than healthy ones.

### **Protein**

Chlorella has the amino acids, including the essential amino acids, that the body doesn't make on its own such as: leucine, isoleucine, phenylalanine, valine, tryptophan, threonine, methionine. These amino acids contribute to the body's ability to repair lean tissues.

Chlorella has 3 times more protein than meat, ounce for ounce. Chlorella has twice as much protein as spinach and way more than soybeans, which are typically considered to be the ultimate protein source for vegetarians and vegans. It is reported as being somewhere between 55% to 75% protein.

Chlorella can also be used as a source of bioavailable B12, most sources of B12 are in animal products. Taking chlorella regularly can help vegetarians and vegans meet the recommended daily dose.

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In the 1940s and 1950s there was a global push to find new food sources to fight the world hunger crisis. Places like UC Berkley, the Atomic Energy Commission and the Carnegie Institution began studying algae to see if it could replace meat as a protein source. Land was being used more and more for the expansion of cities so scientist wanted to look at how to tap into ocean resources for purposes other than fishing.

Chlorella was hoped to replace animals for protein and as a supplement for other food products to fortify them with vitamins and minerals. Improvements were then made to crop efficiency in traditional agriculture around that time and chlorella farming was put on the back burner. The scientific community discovered that, due to the cost of producing chlorella, it would not become the replacement for meat as once hoped. It is currently mainly just sold as a supplement.

Research is still ongoing on how to reduce the cost of production so that it can potentially become a food staple in years to come, especially as a replacement for meat sources.

### **Neurological Benefits**

The World Health Organization reports that depression is one of the most common health afflictions in the western world. Employers state that depression is one of the leading reasons why employees lose work time and need to use disability insurance to cover lost income. Research done on chlorella supplementation on animals and

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humans shows that chlorella can have a massive benefit to mental health and might also prevent cognitive decline in the aging brain.

A study was done on mice that were pre-disposed to develop dementia. Mice with dementia were given chlorella supplements. The theory was that mice could be fed chlorella which would slow down the rate of cognitive decline. The study was successful and showed that chlorella reduced oxidative stress in mice, slowing their rate of cognitive decline.



A major cause of cognitive decline and memory loss is oxidative stress. Researchers were investigating to see if chlorella could be used to slow the rate of cognitive decline.

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The results of the study on mice has shown that the progression of cognitive impairment can be slowed by long-term dosing of chlorella.

Another reason why chlorella is being studied for brain health is to see if it can improve mental health, specifically depression.

Chlorella vulgaris extract (CVE) was studied to see if it could improve symptoms of Major Depressive Disorder (MDD). For 6 weeks one group of human participants took 1800mg/day of chlorella in addition to their regular anti-depressants. A control group in the study took no chlorella and continued on taking their regular anti-depressants. The group taking chlorella reported feeling less anxiety and depression at the end of the study.

Long-term dosing of chlorella can improve symptoms of depression as well as reduce your chances of contracting dementia and memory loss in your later years.

Chlorella has many more health benefits than have been listed here such as; helping fibromyalgia, skin conditions, blood pressure, hormone balance and might even help chemotherapy patients. It is currently available in granules, powder and tablets but it is not yet something that you would eat as a meal or for its taste. It typically comes as a supplement or a powder that you would add to a drink or a meal.

When purchasing chlorella, be sure to look for the “open cell wall” variety, as it has

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undergone the process that breaks down the cell walls so your body can access the nutrients, vitamins and chlorophyll. The elements that make chlorella healthy are bound up in the cell walls. The nutrients within the cells will be unlocked for your body which will not occur if it has not undergone this processing.

It is fascinating that the research started on chlorella in the 1940s and 1950s is ramping back up today for all the same reasons. Chlorella might be the food source needed to feed the ever-increasing human population on the planet. It produces way more protein than traditional, animal-based sources, ounce for ounce. And, as it is creating this dynamic protein source, it is also converting carbon dioxide to oxygen.

Chlorella has these amazing benefits for the planet and also has numerous benefits for the human body. There are improvements upon the body's ability to detoxify heavy metals and ability to fight cancer. It is proven to help with weight loss, improve aerobic endurance and boost the immune system. Chlorella works against heart disease, provides loads of protein and improves neurological functioning. There are studies currently being done that show that chlorella has many other health benefits as well.

Chlorella can be hard to come by; look in health-food stores, pharmacies and online. As we all wake up to the health benefits of this super-food, demand for the product will increase. Hopefully chlorella will soon begin to appear on the shelves of grocery stores as a staple of our regular diet.