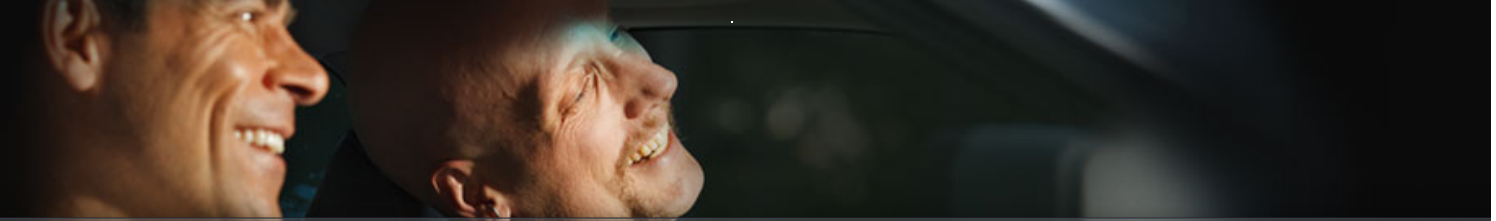


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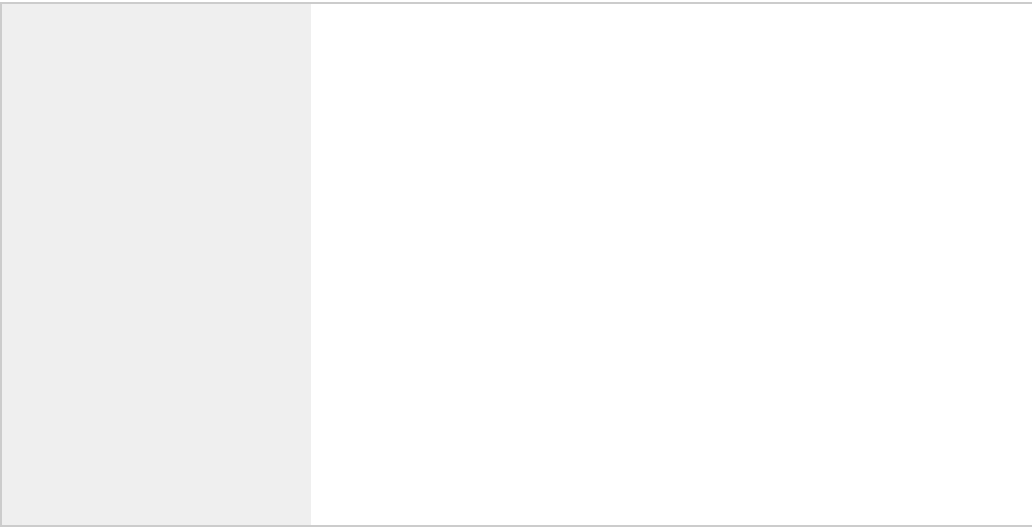
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Chlorella

Other common name(s): sun chlorella, green algae

Scientific/medical name(s): *Chlorella pyrenoidosa* and *Chlorella vulgaris* are the species most used in supplements

Description

Chlorella is a single-celled freshwater alga. Chlorella contains vitamin C and carotenoids, both of which are antioxidants (see our documents [Beta Carotene](#), and [Vitamin C](#)). Antioxidants are compounds that block the action of free radicals (unstable molecules that can damage cells). Chlorella is also reported to contain high concentrations of iron and B-complex vitamins (see the document [Vitamin B Complex](#)).

These algae are noted for their large amounts of chlorophyll, the chemical that gives plants their green color. Plants require chlorophyll for photosynthesis, the process by which plants convert light into chemical energy. Chlorophyll is also abundant in green leafy vegetables.

Overview

Chlorella is widely used in Japan for a variety of health conditions, but available scientific studies do not support its effectiveness for preventing or treating cancer or any other disease in humans.

How is it promoted for use?

Chlorella is promoted as an herbal remedy for a wide range of conditions. Proponents claim it kills several types of cancer, fights bacterial and viral infections, enhances the immune system, increases the growth of "friendly" germs in the digestive tract, lowers blood pressure and cholesterol levels, and promotes healing of intestinal ulcers, diverticulosis, and Crohn's disease. It is said to "cleanse" the blood, digestive system, and the liver. Chlorella supporters also say that it helps the body eliminate mold and process more oxygen.

Supporters state that chlorella supplements increase the level of albumin in the body. Albumin is a protein normally present in the bloodstream, and promoters claim it protects against diseases such as cancer, diabetes, arthritis, AIDS, pancreatitis, cirrhosis, hepatitis, anemia, and multiple sclerosis.

Chlorella is said to prevent cancer through its ability to cleanse the body of toxins and heavy metals. Some Web sites describe it as the perfect food, saying that it regulates blood sugar, kills cancer cells, strengthens the immune system, and even "reverses the aging cycle."

Available scientific evidence does not support these claims. Because of this, the U.S. Food and Drug Administration (FDA) has warned the proprietors of at least one Web site to stop making unproven statements about chlorella's benefits.

What does it involve?

Chlorella is available in tablets, liquid extracts, and as a powder. Some herbalists recommend 2 to 3 grams per day, though higher doses may be suggested for "detoxification." (A teaspoon of dried chlorella is about 3 grams.) A few people take up to 10 or 15 grams per day. Although it may be taken on its own, many supporters suggest mixing the powdered form of chlorella into foods made with flour, such as bread or cookies. Others recommend mixing it with water or other liquids. Chlorella is also added to a number of different dietary supplements

What is the history behind it?

Chlorella was discovered in the late 19th century. Due to its high protein concentration and rapid growth rate, chlorella was investigated after World War II as a possible food source. In the 1960s, some investigators claimed that the algae decreased the side effects of chemotherapy and slowed the growth of some cancer cells. Most of the research has been conducted in Japan, where chlorella is a popular food or dietary supplement.

What is the evidence?

Available scientific evidence does not support claims that chlorella is effective against cancer or other diseases in humans, although its nutrients may help those who have low levels of certain vitamins or minerals. For example, pregnant women who took 6 grams of chlorella a day were less likely to get iron deficiency anemia, a common problem of pregnancy.

Limited research in cell cultures and animals suggests that chlorella powder may inhibit the activity of some molecules involved in the growth of cancer cells. These results have not been tested in humans, and further testing must be done to find out if these results hold true for people as well as animals.

Chlorella Extracts

One investigation concluded that a protein extract from one type of chlorella prevented the spread of cancer cells in mice. Another study in mice suggested that the extract reduced the side effects of chemotherapy without affecting its anti-cancer effects.

A 2001 study from Brazil showed that an extract of chlorella prolonged the survival of mice that were injected with

tumor cells. However, study results for extracted chemicals cannot be compared with studies using the whole plant. Further studies are needed to find out if the study results of this extract apply to humans.

In 2003, a supplement derived from chlorella was given to healthy adults to learn whether it boosted immune response to the flu shot. The study found there was no significant difference in antibodies between the group that received the chlorella supplements and the one that did not.

Are there any possible problems or complications?

This product is sold as a dietary supplement in the United States. Unlike companies that produce drugs (which must be tested before being sold), the companies that make supplements are not required to prove to the Food and Drug Administration that their supplements are safe or effective, as long as they don't claim the supplements can prevent, treat, or cure any specific disease.

Some such products may not contain the amount of the herb or substance that is on the label, and some may include other substances (contaminants). Actual amounts per dose may vary between brands or even between different batches of the same brand. In 2007, the FDA wrote new rules to improve the quality of manufacturing for dietary supplements and the proper listing of supplement ingredients. But these rules do not address the safety of the ingredients or their effects on health.

Most such supplements have not been tested to find out if they interact with medicines, foods, or other herbs and supplements. Even though some reports of interactions and harmful effects may be published, full studies of interactions and effects are not often available. Because of these limitations, any information on ill effects and interactions below should be considered incomplete.

Although chlorella appears to be safe in those who are not allergic, no research has been done in humans to learn whether it causes side effects or what can be expected from long-term use. If hives or a rash develops, stop taking chlorella and seek medical attention immediately.

Relying on this type of treatment alone and avoiding or delaying conventional medical care for cancer may have serious health consequences.

To learn more

More information from your American Cancer Society

The following information on complementary and alternative therapies may also be helpful to you. These materials may be found on our Web site (www.cancer.org) or ordered from our toll-free number (1-800-ACS-2345).

[Guidelines for Using Complementary and Alternative Therapies](#)

[Dietary Supplements: How to Know What Is Safe](#)

The ACS Operational Statement on Complementary and Alternative Methods of Cancer Management

[Complementary and Alternative Methods for Cancer Management](#)

[Placebo Effect](#)

[Learning About New Ways to Treat Cancer](#)

[Learning About New Ways to Prevent Cancer](#)

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Note: This information may not cover all possible claims, uses, actions, precautions, side effects or interactions. It is not intended as medical advice, and should not be relied upon as a substitute for consultation with your doctor, who is familiar with your medical situation.

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