



PATIENT & CAREGIVER EDUCATION

Blue-green Algae

This information describes the common uses of Blue-green Algae, how it works, and its possible side effects.

Tell your healthcare providers about any dietary supplements you're taking, such as herbs, vitamins, minerals, and natural or home remedies. This will help them manage your care and keep you safe.

What is it?

Blue-green algae have not been shown to treat or prevent cancer, AIDS, attention deficit hyperactivity disorder (ADHD), or other serious medical conditions.

Blue-green algae are a natural source of protein and vitamins, which may reduce fatigue. Blue-green algae products usually contain either AFA-algae (*Aphanizomenon flos aquae*) or Spirulina species, or both. Both may have biological activity. In laboratory experiments, calcium spirulan, an extract from

Spirulina, stopped doubling of HIV virus, herpes simplex virus, cytomegalovirus, and influenza virus, but it is not known whether any of these effects would occur in the human body. Other studies showed that spirulina protected lab animals from genetic mutations caused by chemicals and radiation, but again, it is unclear whether these effects happen in humans. In healthy humans, AFA-algae appear to increase blood levels of natural killer cells (a type of immune cell). AFA-algae also show anti-viral and anti-mutation activity in the laboratory. Spirulina algae also contain high levels of gamma-linolenic acid (GLA), an essential fatty acid that is often able to prevent the accumulation of cholesterol in the body.

It is important to note that blue-green algae may be contaminated by strains of algae (e.g. *Microcystis* species) that are toxic.

What are the potential uses and benefits?

- **As an appetite suppressant**
No scientific evidence supports this use.
- **To treat ADHD (attention deficit hyperactivity disorder)**
There are no data to back this claim.
- **To lower cholesterol**
There is some evidence that spirulina may help lower cholesterol in patients with nephrotic syndrome-

induced hyperlipidemia

- **To prevent and treat cancer**

Laboratory studies show that blue-green algae may help protect against DNA mutations.

- **To prevent and treat fatigue**

Scientific evidence is lacking to support this claim.

- **To treat HIV and AIDS**

Blue-green algae show anti-viral activity in the laboratory.

- **To stimulate the immune system**

One study in healthy humans showed that AFA-algae increased blood levels of natural killer cells (immune cells). There is no evidence that such effects help the body fight infections or maintain health.

- **To treat viral infections**

Blue-green algae show anti-viral activity in the laboratory. Human studies are needed.

- **For weight loss**

Small studies show that spirulina may benefit obese and overweight adults by reducing triglyceride levels. But larger studies are needed.

What are the side effects?

- Anaphylaxis (serious allergic reaction)

Case Report: A 28-year-old man developed acute rhabdomyolysis (severe muscle weakness and pain) after taking Spirulina supplements for one month. His symptoms resolved after discontinuing supplement use.

Case Report: A day-old baby was hospitalized for generalized seizures associated with hypercalcemia (high levels of calcium in blood), found to be related to the mother's long-term consumption of Spirulina supplements.

- In rare cases, cyanotoxin (e.g. anatoxin, saxitoxin, microcystins) contamination of may cause liver damage, kidney failure, neurological damage, seizures, respiratory arrest, acute pancreatitis (inflammation of pancreas), and damage to the muscles of the heart.

What else do I need to know?

Research Evidence:

Do Not Take if:

- You are taking drugs that are substrates of Cytochrome P450: Spirulina inhibits CYP 1A2 and 2E1, and may cause accumulation of drugs metabolized by these enzymes, thereby increasing the risk of their side effects. Clinical relevance is not known.

If you have questions or concerns, contact your healthcare provider. A member of your care team will answer Monday through Friday from 9 a.m. to 5 p.m. Outside those hours, you can leave a message or talk with another MSK provider. There is always a doctor or nurse on call. If you're not sure how to reach your healthcare provider, call 212-639-2000.

For more resources, visit www.mskcc.org/pe to search our virtual library.

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