

Spirulina is considered one of nature's most perfect foods because it performs such a broad spectrum of activities in the body. Its nutritional profile shows it can replace many more expensive supplements, and its research profile reveals its dedication to promoting good health. Several animal studies have documented the ability of spirulina to arrest the development of cancer progression, reduce risk of cancer initiation, and boost the immune system. Spirulina has anti-viral and anti-allergic effects, and is a natural antihistamine. Recently, spirulina has been found effective at lowering the immune response when it has become overactive, a function that may make it effective against autoimmune diseases such as multiple sclerosis.

### **Spirulina's credentials date back more than three billion years**

Spirulina are microscopic coiled blue-green algae that have been around for the past 3.6 billion years or so. Spirulina and other blue-green algae were the generators of the oxygen found in the atmosphere that allowed higher life forms to evolve. These algae contain every nutrient needed by life to evolve into the diversity of life seen on earth today.

Documented use of spirulina dates back to the Aztecs who consumed it in Mexico over five centuries ago. In the recent past, millions of people around the world have used spirulina as a food supplement to their diets based on recommendations of the United Nations and the World Health Organization. Spirulina was chosen by NASA to enrich the diets of astronauts on space missions.

Spirulina is sustainable food, offering more nutrition per acre than any other food. It is able to provide 20 times more complete protein per acre than soybeans, and 200 times more per acre than beef. It contains the eight essential amino acids as well as ten non-essential amino acids, making it an excellent choice for anyone not consuming animal protein. It is rich in enzymes, chlorophyll, magnesium, potassium, calcium, and phosphorous. It is rich in B complex vitamins including B6, biotin, B12, pantothenic acid, folic acid, inositol, niacin, riboflavin and thiamine. It is a good source of essential fatty acids, including linoleic, and arachidonic acid. Spirulina contains 4,000 mg/kg of carotenoids as alpha and beta carotene, xanthophylls, cryptoxanthin, echinenone, zeaxanthin, and lutein.

The pigment that gives spirulina its blue cast is phycocyanin, found in a concentration of about seven percent. Phycocyanin is related to the human pigment bilirubin, which is important to healthy liver function and digestion of amino acids. Another pigment in spirulina is porphyrin, a red compound that forms the active nucleus of hemoglobin.

Spirulina is low in sodium and low in calories.

This nutritional profile, coupled with the ability of spirulina to be grown vertically as well as horizontally, makes spirulina a potential answer to the deepening world food crisis. On the individual level, spirulina's nutrient density gives it the potential to replace many more costly individual supplements and expensive whole food multi vitamin capsules. The nutrients found in spirulina exist in natural harmony and integrity, making them much more highly bioavailable than those found in multi-vitamin and mineral capsules, or in supplements containing isolated nutrients. Many toxicological studies have proven spirulina's safety, even when consumed in large amounts.

### **Study reveals spirulina's power to suppress an overactive immune system**

The study, reported in the December, 2008 issue of the journal *Natural Medicine (Tokyo)* was designed to test the ability of spirulina to modulate the immune system. The in vivo effect of spirulina on humoral immune response, cell-mediated immune response, and tumor necrosis factor alpha was investigated in mice. In vitro, its effect on induced T lymphocyte proliferation was analyzed.

The researchers found spirulina significantly inhibited the humoral immune response, cell mediated immune response reaction, and tumor necrosis factor alpha in the mice in a dose-dependent manner. In vitro, spirulina decreased the mitogen-induced T lymphocyte proliferation in a concentration-dependent manner when compared with controls. The scientists concluded that spirulina's ability to suppress the immune response was remarkable.

### **Spirulina fights Chronic Fatigue Syndrome**

Spirulina restores the body to a state of high energy according to those who use it. The process may be through its high levels of polysaccharides and essential fatty acids. It is one of the few sources of gamma linolenic acid (GLA), providing 30 mg per serving. Spirulina may also boost energy through the lactobacillus in the intestinal tract, which aid in the release of nutrients from food, and enable the production of energy promoting Vitamin B6.

### **Spirulina is a powerful anti-inflammatory**

The anti-inflammatory and anti-histamine properties of spirulina have been well documented. In a recent double-blind, controlled study, people with allergic rhinitis were fed daily with either a placebo or spirulina for twelve weeks. Peripheral blood mononuclear cells were isolated before and after the spirulina feeding, and levels of inflammatory marking cytokines were measured. The researchers found that high doses of spirulina significantly reduced interleukin-4 levels by 32%, demonstrating its protective effect against allergic rhinitis.

Other studies have demonstrated the ability of spirulina to promote mucosal immunity, and improve the symptoms of nasal discharge, sneezing, nasal congestion, and itching. Production of Natural Killer (NK) cells in the body is increased by spirulina.

Spirulina contains 2250 units of superoxide dismutase (SOD), the powerful antioxidant made naturally by the body. As youth is left behind, levels of SOD decline and should be replenished by the diet to slow the aging process.

### **Spirulina found to cause regression of cancer**

There have been few human studies to date using spirulina. Such studies looking for an endpoint of lower cancer incidence are usually based on review of data collected from longitudinal studies designed to provide information in several areas. They reflect existing behaviors and habits rather than the introduction of a substance to be studied.

In one trial with human subjects, the effects of spirulina on oral carcinogenesis were studied. Researchers found that 45 percent of their 77 subjects showed complete regression of leukoplakia, an oral cancerous conditions, after taking spirulina supplements for one year.

Several animal studies have revealed that spirulina produced tumor regression. The most recent of these, reported in the January 21 edition of *Medical Oncology* reported a study of male hamsters introduced to a potent carcinogen through their buccal pouches. They were divided in four groups. Group one received the carcinogen three times a week for 32 weeks. Group 2 received the same carcinogen and at the same time was given 10 mg daily of spirulina. Group 3 received a shorter exposure to the carcinogen and the same amount of spirulina. Group 4 had neither the carcinogen nor the spirulina administered. Hamsters were examined periodically throughout the 32 weeks of the study. Findings revealed a highly significant difference between the different groups, revealing that the spirulina intervention had a beneficial role in regression of cancer progression.

### **Spirulina is a potent antioxidant and body detoxifier**

Spirulina contains a wealth of antioxidant vitamins C and E, as well as the antioxidant minerals selenium, manganese, zinc, copper, iron, and chromium. Its antioxidant capabilities have been shown to reduce the toxic effects of cadmium, and of free radicals generated by inflammatory processes. It has also been highly effective against mercuric chloride induced oxidative stress.

Spirulina has been found to reduce kidney toxicity resulting from heavy metals including mercury, and from pharmaceutical drugs. It has also been shown to promote the elimination of dioxin.

### **Spirulina promotes lower blood pressure and LDL cholesterol**

Studies with men in Japan and India showed that several grams of spirulina daily can reduce serum LDL and improve the cholesterol ratio. Human studies in Germany and India found a weight reduction effect from spirulina along with the cholesterol normalizing effects.

In a 2007 study reported in *Lipids Health Digest*, 36 human subjects ingested 4.5 grams of spirulina daily for six weeks without making any other modifications in their diets or lifestyles during the course of the study. After the six week period, total cholesterol concentrations and levels of body fat were lowered. Systolic and diastolic blood pressure was reduced.

### **Spirulina improves digestive tract health**

Spirulina provides a tremendous boost to digestive functioning. When it is added to the diet, an improvement in regularity and elimination is almost immediate. Spirulina suppresses bacteria like e-coli, and stimulates beneficial flora to assure protection against infection and maximum nutrition from food that is eaten.

### **Spirulina flakes are now on the market**

Spirulina has been available as powder or tablets. Now crystal flakes of spirulina are on the market, making adding spirulina to meals much easier. Flakes can be added to smoothies, or sprinkled on salads, pasta or popcorn. The flakes blend into guacamole, soups and sauces. Spirulina flakes contain all the nutrition of powdered spirulina and have been dried at low temperatures that protect enzymes.

For more information:

[www.naturalways.com/spirulina-analy...](http://www.naturalways.com/spirulina-analy...)

<http://www.naturalnews.com/023661.html>

<http://ecam.oxfordjournals.org/cgi/...>