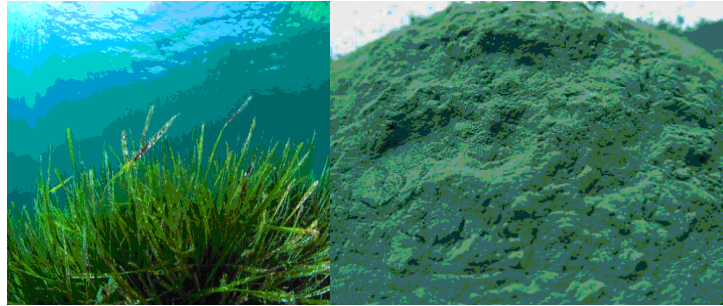


SPIRULINA AS A FOOD SUPPLEMENT

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Abstract:

Spirulina is a great product that people can use to improve their overall health. There are many health benefits offered by this product. For this reason, many people consider Spirulina as a supplement. Spirulina can help people prevent some serious health problems such as allergies, diabetes, oral cancer, malnutrition and anemia. Extensively tested, Spirulina is found to be a non-toxic, cholesterol-free natural food, rich in protein, Vitamin C, minerals and trace elements.

Keywords: Spirulina, malnutrition, anemia.

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History of Spirulina

Spirulina has been consumed by many people for a very long time in many countries. It grows in many lakes, seas, and oceans all around the world. Spirulina was found growing in Lake Chad and Mexico's Lake Texcoco, and people of these regions have been drying and eating spirulina since ancient times.

Spirulina was first discovered by Hernando Cortez and his Spanish Conquistadors in 1519. The health benefits of spirulina were first discovered by explorer Pierre Dangeard.

Spirulina cultivation

Spirulina is a large, single-celled algae named for its microscopic spiral-shaped strands. It is made up primarily of protein (65%) and is the most balanced and digestible known plant protein source. It is used as a food supplement to combat malnutrition. Spirulina is cyanobacterium. It is cultivated worldwide and used as a dietary supplement as well as whole food. The United States leads the world production followed by Thailand, India and China. More countries are planning its production as they realize it is a valuable strategic resource of protein.

A simple nutrient feeds for growing Spirulina are:

- Baking soda -16g/L
- Potassium nitrate – 2g /L
- Sea salt -1g/L
- Potassium phosphate -0.1g/L
- Iron sulphate - 0.01g/L

Nutritional value per 100g:

Energy - 290 kcal, carbohydrates - 23.9 g, dietary fiber - 3.2 g, fat - 7.72 g, protein - 57.47 g, vitamin A - 29 microgram, vitamin C - 10.1 mg, calcium - 120mg, iron - 28.5 mg, zinc - 2mg.

Benefits of spirulina include

- Spirulina provides intense nutritional support to aid in tissue repair, organ function, providing energy, digestion and immunity.
- The enzymes in spirulina are in assimilable form and ready for use in the body.
- It feeds and increases intestinal flora such as lactobacillus and bifidus.
- It helps calm nerves and fights stress.
- It is an effective weight loss aid.
- It has a very high concentration of bio-available iron and is excellent for under-five children.
- It is extremely high in chlorophyll which helps remove toxins from the blood and boost the immune system.

- It contains many essential nutrients for human body. These nutrients are required by our body to grow properly.
- It has some important nutrients, such as B complex vitamins, vitamin E, and also beta-carotene. These vitamins are good for improving our overall health.
- It is high in antioxidants. Antioxidants destroy the free radicals in the body that damage cells..
- It is 65% protein and amino acids including the essential fatty acid Gamma linolenic acid (GLA) which has received a lot of attention for its anti-inflammatory properties, especially when taken with other quality Omega-3 supplements like Fermented Cod Liver Oil. It contains all essential amino acids.
- It contains Omega-3, 6 and 9s and is especially high in Omega-3s.
- Stimulates the immune system.
- Increases anti-viral activity.
- Offers anti-aging and neuro-protective benefits.
- Reduces risk of cancer.
- Reduces kidney toxicity.
- Overcomes malabsorption and malnutrition.
- Improves wound healing.
- Reduces radiation sickness
- It is also incredibly high in calcium with over 26 times the calcium in milk, making it excellent for children, the elderly and pregnant women.
- Some research had suggested that Spirulina might be helpful in allergies and allergic reactions.
- It's phosphorus content makes it helpful as part of a tooth remineralization regimen.
- It 's ability to inhibit viral replication strengthens both the cellular and humoral arms of the immune system and causes regression and inhibition of cancers.

Research studies related to effects of spirulina:

A study conducted by Harvard Medical School, California (1996) says "Water extract of Spirulina platensis inhibits HIV-1 replication in human derived T-cell lines and in human peripheral blood mononuclear cells. A concentration of 5-10 mg/ml was found to reduce viral production." HIV-1 is the AIDS virus. Small amounts of Spirulina extract reduced viral replication while higher concentrations totally stopped its reproduction. Fathima Kauser and Salma Parveen (1999), conducted the study on effect of Spirulina as a Nutritional Supplement on Malnourished Children, in the age group of six years. The children of the experimental group were given nutritional supplement

Spirulina (1 gram / day) for a period of three months and the control group was given placebo for the same period. Diet pattern was same for all the 20 subjects. Results showed that there was an increase in the serum haemoglobin level and serum protein level in the experimental group after the supplementation with Spirulina. Simpore, et al., (2006) conducted a study on nutritional rehabilitation of under nourished children utilizing spirulina and misola (a mixture of Millet, Soya, Peanut etc.) in Ouagadougou, Burkina Faso. 550 under nourished children of less than 5 years old were enrolled in this study. They divided the children randomly into four groups; 170 were given misola, 170 were given spirulina plus misola, 170 were given spirulina plus traditional meals, 40 children received only traditional meals. The duration of this study was 8 weeks. Their results indicate that misola, spirulina plus traditional meals or spirulina plus misola are all a good food supplement for under nourished children. Ramesh, et al (2013), conducted a study on, effect of Spirulina on Anthropometry and Bio-Chemical Parameters in School. Three capsules of spirulina were given during dinner time for 3 months. At the initial survey and at the end of 6th month the anthropometric and bio-chemical findings were recorded. Blood samples were taken to analyse hemoglobin (Hb), serum ferritin, serum zinc, serum protein and serum albumin levels at 0, 3 and 6 months. There was a significant increase in anthropometric measurements and Hemoglobin, serum ferritin, serum zinc, serum protein and serum albumin levels in the study sample after 6 months. The anthropometric and bio-chemical parameters improved after the use of spirulina.

Advantages:

- Can be produced locally and so has social as well as economic benefits.
- Cheap to produce.
- Uses simple technology and locally available materials.
- Requires much less water to grow than vegetables.
- Motivates the education of local women about nutrition.
- Can be combined with other products (e.g. rice etc.) to be made into locally acceptable food products all around the world.
- Very effective, contains most essential micronutrients in high concentrations and hence 1 gm per day can combat malnutrition within a month.
- Very easy to digest.

Dosage of Spirulina:

A standard dose of spirulina is between 1-3 g/ day. Adults; 3-6 tablets daily, children; 1-3 tablets daily. One tablet = 500mg. It is available in tablets, capsules and in powder form.

Conclusion:

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I would say that spirulina is not only safe for the kids, but it is quite beneficial. Children often are afflicted with different ailments that adults experience no longer, and if they get an immunity boost, they could avoid most of these problems, or at least hasten their healing process if they already happen to be sick. It provides optimum nutritional support for promotion of health.

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