

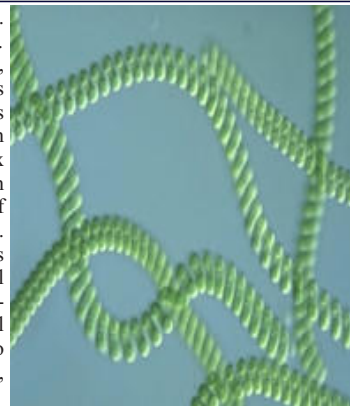
VAST APPLICATIONS OF SPIRULINA IN HUMAN LIFE & MAJOR ACTION IN INFLUENZA VIRUSES

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ABSTRACT

Spirulina is a type of Cyanobacteria, which is in the colour of blue-green⁷. It is a single celled protein. It became popular again when NASA proposed that it could be grown in space for use by astronauts. Single spirulina capsule contains about amount of protein (60-70% by weight), essential amino acids, vitamins & minerals. It is a best proteinaceous food for vegetarians and called the Veegan. It lives naturally volcanic lakes or crater lakes throughout Africa, Asia, central & South America. Indigenous people living around lake Chad in Africa & lake Texaco in Mexico have been harvesting spirulina for 1000 of years². Spirulina is a symbiotic (multicellular, filamentous that fix nitrogen from air. It is recognisable by the arrangement of the multicellular cylindrical trichomes in an open left hand helix along the entire length. The blue green non-heterocytes filaments composed of vegetable cells that undergo binary fission in a single plane show easily visible transverse cross walls¹. The trichomes have a length of 50-500 μm & a width of 3-4 μm ⁵. Its main photosynthetic pigment is phycocyanin which is blue in colour¹. Spirulina also acts as potent immunomodulator. Natural substances isolated from spirulina are reported to be effective inhibitors against enveloped & non-enveloped viruses by interfering or blocking the adsorption & penetration of virus, and also inhibit viral replication in the host cells³. Spirulina are photoautotrophs they cannot grow in the dark place. It is also have a medicinal properties like anti-inflammatory, antiallergic, anti cancer, anti obesity, anti diabetic, anti viral, anti bacterial, anti hepatic activities⁶.



KEYWORDS

NASA, Astronauts, Indigenous, Non heterocytes Photoautotrophs

INTRODUCTION:

Spirulina is a nutrient rich blue green algae obtained from the dried biomass⁸ of certain species of cyanobacteria i.e., *Arthrospira Platensis*, *Arthrospira Fusiformis*, & *Arthrospira Maxima*. It is also called as superfood because it packed with nutrients.

It is an algae that is rich in nutrients¹. It is a single celled microbe that are often referred to spirulina was consumed by the ancient aztecs and also take by astronauts.

It contains a significant amount of protein, essential amino acids, vitamins & minerals. It contains high in antioxidants particularly phycocyanin. It relieves the oxidation stress.

Origin Of Spirulina:

Spirulina is a tiny spiral shaped blue green algae. It is one of the oldest existing life forms on the planet, estimated to be more than 3 billion years old. It lives naturally volcanic lakes, or crater lakes through out Africa, Asia, central & south America. Indigenous people living around lake Chad in Africa & lake Texaco in Mexico, have been harvesting spirulina for 1000 of years. Spirulina is a detoxifying, immune boosting & nutritious food source containing many proteins, essential amino acids, vitamins & minerals².

Health Benefits:

- Perfect all nutrients packed food for vegetarians.
- Preventing the iron deficiency anemia, good for pregnant women.
- Boosting of the immune system
- Inhibition of mother child transmission to HIV².
- Acts as anticancer due to presence of high beta-carotenoids.
- Lowering of the cholesterol level & blood sugar.
- It gives a best malnutrition support.

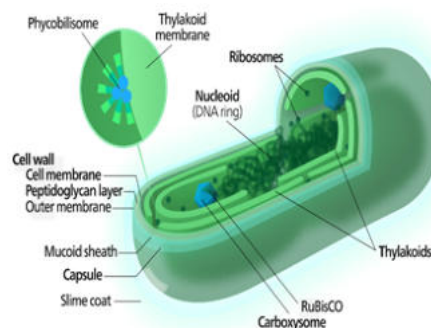
Pharmacological Effects Of Spirulina:

Spirulina¹ unusually high protein content & its richness in vitamins, minerals, carotenoids, & essential fatty acid are present and they involve many bioactivities including antioxidant, anti inflammatory, anti allergic, anti cancer, anti obesity⁶, antidiabetic, antiviral, antibacterial, antihepatopathy activities.

Morphology Of Spirulina:

Spirulina is a symbiotic, multicellular, filamentous blue green microalgae with symbiotic bacteria that fix nitrogen from air. It is recognisable by the arrangement of the multicellular cylindrical trichomes in an open left hand helix along the entire length. The blue green non-heterocytosus filaments composed of vegetable cells that

undergo binary fission in a single plane show easily visible transverse cross walls¹. The trichomes have a length of 50-500 μm & a width of 3-4 μm . Its main photosynthetic pigment is phycocyanin which is blue in colour. It also contains chlorophyll alpha & carotenoids some contain the pigment phycoerythrin giving a red or pink colour¹. Spirulina are photoautotrophs (they cannot grow in the dark)



Spirulina Actions On Influenza Virus:

Spirulina also acts as potent immunomodulator. Natural substances isolated from spirulina are reported to be effective inhibitors against enveloped & non-enveloped viruses by interfering or blocking the adsorption & penetration of virus and also inhibit viral replication in the host cells. EL.Baz et al., 2013 reported that spirulina maxima extract prepared using hot water showed less than 20% inhibition on adenovirus type 3 with IC₅₀ 5.2mg/ml and no inhibition was observed at concentration below 2mg/ml. (Hernandez corona et al., 2002., Rahman et al., 2006).³

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