



SPIRULINA AS PROTEIN SUPPLEMENT TO IMPROVE ATHELETES PERFORMANCE

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Abstract: Spirulina is a microalga that is extremely rich in protein, iron, beta carotene, vitamins, minerals and trace elements. Spirulina, a blue-green algae available in powder, flake and tablet form, is very high in protein, which researchers suggest could enhance muscular strength and athletic endurance. A total of 50 male athletes aged 18 to 24 were volunteered for the study. Experimental group of 25 athletes were administered with Spirulina tablet 5 g/day for 30 days. Anthropometric measurements were assessed in both control and experimental group before and after the administration of spirulina. The subject were assessed through the battery of motor tests proposed by the AAPHERD. Significant difference was found between control group and Spirulina supplemented group after 30 days. The supplementation of spirulina to the experimental group resulted in significant increase ($p < 0.05$) in Endurance and strength of atheletes. No changes in body mass was seen in any of the groups. Although wholesome natural foods are the best way to obtain dietary protein, Spirulina –a commercial protein supplements may be recommended for atheletes.

Keywords: Coordinative ability, Semi-contact sports, Non-contact sports, Reaction Ability, Orientation Ability, Differentiation Ability, Rhythm Ability

Introduction:

Spirulina is a cyanobacterium that can be consumed by humans and other animals; there are two species, *Arthrospira platensis* and *Arthrospira maxima*.

The maxima and plaetensis species were once classified in the genus *Spirulina*. There is now agreement that they are in fact *Arthrospira*; nevertheless, and somewhat confusingly, the older term *Spirulina* remains in use for historical reasons. *Arthrospira* is cultivated worldwide; used as a dietary supplement as well as a whole food; and is also available in tablet, flake and powder form. It is also used as a feed supplement in the aquaculture, aquarium and poultry industries.

Spirulina has been used as a food additive due to its high protein content, as well as its essential nutrients such as carotenoids, vitamins, and minerals.

Torres-Durán et.al. 2012 evaluates the effects of orally administrated *S. maxima* on postprandial lipemia in a young Mexican sporting population after 15 days of consumption, as a possible alternative treatment to improve their lipid clearance.

Previous studies have demonstrated that *Spirulina* (rich in iron and vitamins) prevents anemia, inhibits herpes simplex infection, decreases HIV replication velocity, increases antibody production, and has

hypoglycemic, hypolipemic, and antihypertensive properties in experimental models and humans. Kalafati et al. 2010, recently studied the effect of 6 g per day of *Spirulina* on nine moderately trained men. They measured exercise performance and some antioxidant enzymes after placebo and *Spirulina* supplementation, and found that the *Spirulina* supplement induced a significant increase in exercise performance, fat oxidation, and reduced glutathione concentration, and attenuated the increase of exercise-induced lipid peroxidation.

Method and Material:

A total of 50 male atheletes aged 18 to 24 randomly selected for the study and were divided into two group a) control group and b) Experimental group. Experimental group of 25 athletes were administered with *Spirulina* tablet 5 g/day for 30 days. The control group did not receive any supplement. Same volume of training was given to both control and experimental groups during spirulina supplementation. Dietary intake of Subjects were not controlled by researchers. Anthropometric measurements were assessed in both control and experimental group before and after the administration of spirulina. The

subject were assessed through the battery of motor tests proposed by the AAPHERD.

Result and Discussion:

Anthropometric measurements of control and experimental group shows that Blood pressure, weight and body mass index(BMI) remained unchanged with significant difference ($p < 0.05$).

Significant difference was found between control group and Spirulina supplemented group after 30 days. The supplementation of spirulina to the experimental group resulted in significant increase ($p < 0.05$) in Endurance and strength of athletes. No changes in body mass was seen in any of the groups.

Torres-Durán et.al. 2012, reported that orally administered *S. maxima* decreased postprandial lipemia in sporting teenagers. The youngest people were the most responsive to the beneficial effects of Spirulina on postprandial lipemia.

The supplementation of spirulina and CAS resulted in significant increase ($p < 0.05$) in the levels of serum β -carotene, serum α -tocopherol, and plasma ascorbic acid. A significant decrease ($p < 0.05$) in the level of MDA in the two supplemented groups was also observed. No significant difference was found between spirulina and commercial antioxidant supplement (CAS) supplemented groups. Supplementation with spirulina and CAS improves serum antioxidant status and confers protection against exercise-induced oxidative stress.(Kalpana, Kommi, et.al.2012).

Although wholesome natural foods are the best way to obtain dietary protein, Spirulina –a commercial protein supplements may be recommended for athletes.

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