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REVIEW ARTICLE

Spirulina Cultivation: A Review

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ABSTRACT

Blue-green algae (Cyanobacteria) are among the most primitive life forms on Earth. Their cellular structure is a simple prokaryote. They share features with plants, as they have the ability to perform photosynthesis. They share features with primitive bacteria because they lack a plant cell wall. Interestingly, they also share characteristics of the animal kingdom as they contain on their cellular membrane complex sugars similar to glycogen. Among blue-green algae, both edible and toxic species adapted to almost any of the most extreme habitats on earth. Edible blue-green algae, *including Nostoc*, *Spirulina*, and *Aphanizomenon* species have been used for food for thousands of years. *Spirulina* are multicellular and filamentous blue green algae that has gained considerable popularity in the health food industry and increasingly as a protein and vitamin supplement to aquacultures diets. It grows in water, can be harvested and processed easily and has very high macro and micro nutrient contents.

Key words: *Spirulina platensis*, Zarrouk's medium, Mass cultivation and Protein content.

1. INTRODUCTION

The protein is an essential component of diet. The greatest single problem in the world today is Global food protein shortage. With the current system of production, agriculture cannot be relied upon to feed an ever increasing world population. Hence, there is an urgent need to find other protein sources. The best potential is seen in microbial protein or single cell protein (SCP), a new source of protein independent of agriculture. The dried cells of microorganisms such as bacteria, fungi, yeasts and algae that are grown in large scale culture systems as proteins, for human or animal consumption are collectively known as single cell protein. SCP are characterized by; fast growth rate; high protein content (43-85%) compared to field crops; require less water, land and independent of climate; grow on wastewater; can be genetically modified for desirable characters such as amino acid composition and temperature tolerance [1].

Spirulina has been used as a complementary dietary ingredient of feed for fish, shrimp and poultry and increasingly as a protein and vitamin supplement to aqua feeds [2]. China is using this micro alga as a partial substitute of imported forage to promote the growth, immunity and viability of shrimp. There has also been comprehensive research on the use of *Spirulina* as aquaculture feed additives in Japan.

During the sixtieth session of the united nations general assembly (second committee, agenda item 52), a revised draft resolution on the "Use of Spirulina to combat hunger and malnutrition and help achieve sustainable development" was submitted by Burundi, Cameroon, Dominican Republic, Nicaragua and Paraguay. As follow up of this resolution, FAO was requested to prepare a draft position paper on *Spirulina* so as to have a clearer understanding on its use and to convey FAO position on this.

Spirulina platensis has been used as food for centuries by different populations and only rediscovered in recent years. Once classified as the "blue-green algae'', it does not strictly speaking belong to the algae, even though for convenience it continues to be referred to in that way. It grows naturally in the alkaline waters of lakes in warm regions [3]. Measuring about 0.1mm across, it generally takes the form of tiny green filaments coiled in spirals of varying tightness and number, depending on the strain. Its impressive protein content and its rapid growth in entirely mineral environments have attracted the attention

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