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HOW ARE ALGAE OF IMPORTANCE TO MAN

1. Direct use of algae as food for man:

Since the pre-historic times, several sea weeds have been used as direct source of food to human beings. Several fresh water algae have also been utilised in the preparation of various kinds of vitaminized food. As we know well that the fundamental food of sea living stock are algae and they are used as food by human beings.

Since the algae are rich in vitamins and minerals, all the deficiencies are over run by the use of algae as food. The algae (sea weeds) form the most important part of the diet of Japan and China. And some people think that the artistic taste and cultural development of the people of Japan is because of the use of the sea weeds as food. In our country, a few species of Spirogyra and Oedogonium are utilised as food in South India.

Several preparations of algae are used in various countries. Of course Japan tops the list. Suimono is a Japanese preparation of dried fish and several sea weeds. Mitsu is another Japanese preparation which contains sea weeds, fruits, sugars and dried kidney beans. Dulse is an English dish of algae prepared from Rhodymenia. Seatron is prepared from Nereocystis in United States. Laver or Norl is prepared in Japan from Porphyra. Green Laver is prepared in South India from Spirogyra and Oedogonium. Kompu is the product of many Laminariales.

Apart from China and Japan, in Malaya, Indonesia, Myanmar and Thailand, the sea weeds are used as food. Ulva lactuca was used in Scotland for the preparation of salad and soups. Laminaria saccharina, Rhodymenia palmata have been used as food in parts of Scotland and Ireland and Porphyra is considered to be a tasteful culinary dish in many parts of England.

Among the more important algal food industries may be mentioned carrageen. This is a product of several sea weeds but principally Chondrus crispus. Carrageen is used by soaking it in water and mixing it with milk. Carrageen possesses the properties of gelling which is one of the factors which enhances its usefulness. Fruit juice may also be mixed with it forming fruit jelly. It is also employed in the preparation of ice creams and in the confectionery industry.

The sea weeds are also used as food in the regions of Far East and Australia. The inhabitants of the Hawaii Island consume large quantities of sea weeds. The indigenous people of Chile use large quantities of Durvillea Antarctica and some species of Ulva. The natives of New Zealand use certain green sea weeds in preparation of salad and soups.

The people of China and Japan consume the sea weeds on large scale. The people living on the sea coasts in these countries commonly use fresh sea weeds as food. In Japan, Porphyra tenera happens to be one of the most important edible alga and a product by the name of Amanori and Asakusa-Nori are made from it.\

2. As a source of vitamins:

The marine algae are the richest source of vitamins. The vitamins A, B and E are found abundantly in sea weeds. The vitamin B essentially required for the development of human body is found in great abundance in almost all Phaeophyceae. The cod liver oil is the rich source of vitamin A, which is acquired from sea weeds. Vitamin E is equally important for human beings which are found in many marine algae.

According to Lundin and Ericson (1956), in the sea weeds of Sweden maximum amount of vitamin B12 and folic acid are found in spring and summer and niacin and folic acid in winter. Vitamin B12 content and also that of B1 are higher in green and red algae than in brown algae and that the niacin and vitamin C content appear to be about the same in the above three groups of marine algae. Several vitamins except ascorbic acid have been reported from Chlorella. The vitamins found in Chlorella are – thiamin, riboflavin, niacin, pyridoxine, pantothenic acid, chlorine, biotin, vitamin B12 and lipoic acid.

DESCRIBE A UNICELLULAR FORM OF ALGAE

Euglena gracilis is a freshwater species of single-celled alga in the genus Euglena. It has secondary chloroplasts, and is a mixotroph able to feed by photosynthesis or phagocytosis. It has a highly flexible cell surface, allowing it to change shape from a thin cell up to 100 µm long, to a sphere of approximately 20 µm. Each cell has two flagella, only one of which emerges from the flagellar pocket (reservoir) in the anterior of the cell, and can move by swimming, or by so-called "euglenoid" movement across surfaces. E. gracilis has been used extensively in the laboratory as a model organism, particularly for studying cell biology and biochemistry.

Euglena gracilis

A morphological and molecular study of the Euglenozoa put E. gracilis in close kinship with the species Khawkinea quartana, with Peranema trichophorum basal to both, although a later molecular analysis showed that E. gracilis was, in fact, more closely related to Astasia longa than to certain other species recognized as Euglena. The transcriptome of E. gracilis was recently sequenced, providing information about all of the genes that the organism is actively using. They found that E. gracilis has a whole host of new, unclassified genes which can make complex carbohydrates and natural products.

HOW DOES THIS UNICELLULAR ALGA DESCRIBED IN Q3 CARRY OUT ITS REPRODUCTION

Euglena reproduce asexually through binary fission, a form of cell division. Reproduction begins with the mitosis of the cell nucleus, followed by the division of the cell itself. Euglena divide longitudinally, beginning at the front end of the cell, with the duplication of flagellar processes, gullet and stigma. Presently, a cleavage forms in the anterior, and a V-shaped bifurcation gradually moves toward the posterior, until the two halves are entirely separated.

DIFFERENTIATE BETWEEN THE TWO TYPES OF COLONIAL FORM OF ALGAE

colonial and filamentous form of organisms are the morphological difference in which the different groups of organism arrange to each other.

In colonial form of organism there are different forms of algae which are arranged very close to each other such as in blue green algae and they resemble the structure of a cannonball full stop however the filamentous form of organism are arranged in such a way that they look like thread.

DESCRIBE A NAMED COMPLEX FORM OF ALGA

Seaweed, or macroalgae, refers to several species of macroscopic, multicellular, marine algae. The term includes some types of Rhodophyta (red), Phaeophyta (brown) and Chlorophyta (green) macroalgae. Seaweed species such as kelps provide essential nursery habitat for fisheries and other marine species and thus protect food sources; other species, such as planktonic algae, play a vital role in capturing carbon, producing up to 90% of Earth's oxygen. Understanding these roles offers principles for conservation and sustainable use. Mechanical dredging of kelp, for instance, destroys the resource and dependent fisheries.