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XANTHOPHYACAE TAXONOMICALLY UNIQUE GROUP

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ABSTRACT

Algae are the heterogeneous group of the organism that ranges from the sizes form the unicells to the giant sea weeds, they have different evolutionary lineages. The algae are usually photosynthetic and they are generally Aquatic in origin, in addition the algae lacks the any differentiation in to the stem, roots and the leaves, the body is in the form the thallus. Algae occurs in the several body type, they ranges from the unicells to the higher thallus of the giganteous kelps, the type of the reproduction of the algae ranges from the asexual to the sexual mode of the reproduction, the asexual reproduction occurs by the zoospores, Apalnospores, auto spores and the akinetes, the sexual mode of the reproduction occurs by the means of the isogamous and the anisogasmous mode, and in the higher genera it is by the oogamous type of the reproduction. The algal diversity is very much, they have been classified by the various means, some of them are the green algae, yellow green algae, brown algae, euglenoids, cryptomonasds, haptophytes, red algae. Commercially algae are of the various uses, they are used in the vary of the purposes, some of them uses as the edible, as the other as the means of industrial purposes. Phylogenetically the group is of the many uses. They have been investigated for the many purposes such as the genetically as well as the photosynthetically, respiratory point of view. In this review article we are presenting some of the aspects of the yellow green algae termed as the xanthophyacae. The member of the xanthohyacae is termed as the golden algae. The members of the xanthophyacae usually occur in the fresh water as well as the soil. They are of the thalliods as well as the simple zoospores, the reproduction occurs in the form of the isogamous, anisogamous and the oogamous types of the reproduction. The major photosynthetic form of the pigments is the chlA, chl C, and the fuxoxanthin. The storage products are the starch or the chrysolamarin starch. The group has been studied in many forms and in many lines.

KEYWORDS: Xanthophyacae, starch, chrysolamarian, isogamous, anisogamous oogamous, thallus, evolution.

INTRODUCTION

The algae are the heterogeneous group of the organisms, they are present on the earth from the billions of the years and they are the main photosynthesis group on the earth. Due to the extensive photosynthetic activity they exert the large amount of the oxygen on the planet; they are chief components of the oxygen on the aquatics ecosystem.[6][7] The algae lacks the thallus body and they have not the true leaves, roots and the stem like the higher plant body, the main body of the plants is the typical gametophytes. The life cycles of the plants are of the haplontic kinds. Algae occur in the diverse body types, algae body can be too small as the tiny body and they have been termed as the microalgae, in addition to that the algae body can be as high that they can be seen without the giant microscope, there giant algae have been termed as the macro algae.[1][2][3] The body of the algae is divided in to the differ pattern, they may be the tuberous and the siphonous and they are generally in the form of the branched filaments. Some of the algae are of the large and they have been considered as the microalgae, they harbour the large place in the oceans and they have been termed as the kelps. Algae have the variety of means of the reproduction, some of them are of the asexual and the other are of the sexual means of reproduction.[6][7]

Algae are classifieds by the various means, some of the way of the classification f other algae are the reserve foods and the pigments and the types of the cell covering and the reproduction types. few group are enlisted as cyanobacteria, glaucophytes, chlorarchniophytes, euglenoids, cryptomonads, haptophytes, dinoflagelletes, red algae and the brown algae. algae always play a great role in the ecosystem, they have been used in the algal biogeochemistry (means all kinds of the biogeochemical cycles), algae have variety of the combinations like the mycorrizae, they have been used in the research tools for the genomics and the proteomics, they are the perfect environmental monitors,. In much food industry as well as in the health and the medicines they have been used to sort out the human needs.[4][5] Algal phylogeny is the lays the point of research, the phylogeny of the algae opens the new doors of the research for the evolution of the life on the earth. Overall the algae are wonderful doors for the research and the other beneficial human applications. They are the wonder of the natures.[6][7]

In this review article we are presenting some of the aspects of the class xanthophyaceae, this minireview article will be useful for the students of the algae of higher as well as the who are beginners in the field of the algal biology.

In the xanthophyacae are about the 100 genera's and the number of the species is around the 600. The members of the xanthophyacae occur in the freshwater as well as the soil, some of the genera of the algae are also found in the seas and in the oceans. Some time they occurs in the form of the phytoplankton.[6][7]

However many species of the xanthophyacae are rare to found, since they never occurs in the abundance in the in any kinds of the habitat. Except the genera such as the *Tribonema and the vaucheria.* some of the unique features of the xanthophyacae are as follows.

1) Most of the species are unicellular and the colonial, coccoid algae. there are also many species in which the thallus is composed of the tubes and in the form of the siphon, in some of the case they are in the form of the filaments, only tiny of the xanthophyaceae are unicells and in the form of the uniflagellates.
2) The flagella are inserted in the apex of the cells, not laterally.
3) A heterokont photoreceptor is present in the zooids.
4) The chloroplast are green, discoid and they are yellow green,-.
5) The main chlorophyll contents are of the chl a, other pigments are of the short amount, the principles accessory pigments are of the beta carotenes, fucoxnathin, vaucheroxanthin, diatoxanthin, dinoxnathin, heteroxanthin, Fucoxanthin is the main pigment of the chrysophyceace, basillariophyace, phaeophyacae are absent in this class.

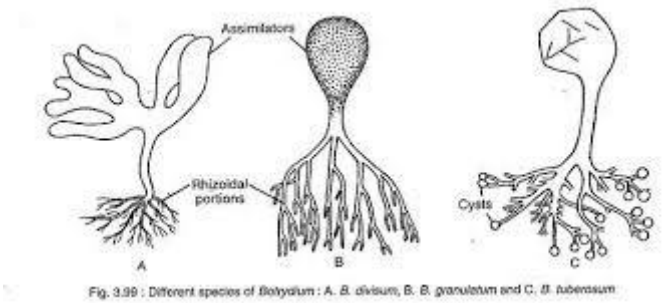

Fig. 1: Xanthophyacae genera's (sources biology discussion).

6) The chloroplast DNA is generally arranged in the form of the ring and they are found in the ring shaped nucleotides.

7) In some species specie cysts are formed, the cysts are made-up of the silica, they have termed as the endogenous cysts,. The wall of the cysts is made up of the two walves, of the silica.
8) The cell wall is impregnated with the silica and they have the two halves.
9) Majority of the xanthohyacae rarely grow in abundance, they usually grow in the isolation.
10) Xanthophycae are widespread in nature, they occurs in the freshwater and the sea water.
11) The main plant body is the siphon type, they are cylindrical and the tube like.

Xanthophyacae has been classified in the various way, however here the classification of the Van den hoek (1995) has been presented here[6][7]., on the basis of the level of organization of the thallus, there are seven orders in the class, theses orders are presented here as:

- Order Chloramoebales (e.g., *Chloromeson*) - flagellate organisms.
- Order Rhizochloridales (e.g., *Rhizochloris*, *Myxochloris*) - ameboid organisms.
- Order Heterogloeales (e.g., *Gloeochloris*) - palmelloid (tetrasporal) organisms.
- Order Mischococcales (e.g., *Chloridella*, *Botrydiopsis*, *Characiopsis*, *Ophiocytium*) - coccoid organisms.
- Order Tribonematales (e.g., *Tribonema*, *Heterococcus*, *Heterodendron*) - filamentous organization.
- Order Botrydiales (e.g., *Botrydium*) - siphonous organization; sexual reproduction isogamous or anisogamous.
- Order Vaucheriales (e.g., *Vaucheria*) - siphonous organization; sexual reproduction oogamous.

Various structure levels of the xanthophyacae: The structure level of the organization varies from the unicellular to the multicellular kinds of the thallus. They are the unicellular flagellates such as the *Chloromeson*, some of the members have the amoeboid level of organization like the *Myxochloris*, palmelloied level of organization such as the *Gleochloris*, coccoid level of organization (*Chloridella*), Filamentous level of organization (*Tribonema*), Siphonus organization *(Botrydium*).

CONCLUSION

Overall this is the short review of the class xanthophyacae, the class includes the about the 100 genera's and the more than the 1000 species in the fresh water as well as in the terrestrial moist place, the class includes the all kinds of the morphological types such as the unicells,

motile non unicells, colonies embedded in the mucilage, amoeba like rhizopodial form, filaments such as the *Tribonema*, multinucleate body such as the siphonacaeous types, by the phylogenetic analysis, it has been revealed that during the evolution, all kind of the morphological types evolved in the different directions, it has been speculated that the siphonaceus kinds of the types originated from the unicellular ancestors.

Xanthophyacae lines of the evolution are the example of the convergent evolution of the many lines of this line of evolution.

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