Subject-Botany **By Dr. Deepti Sharma**
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Paper-2 (Diversity of Algae, Lichen and Bryophyte)
Topic- Classification of Algae

Fritsch's Classification of Algae

F.E. Fritsch (1935, 1945) in his book **"The Structure and Reproduction of the Algae"** proposed a system of classification of algae. He treated algae giving rank of division and divided it into 11 classes. His classification of algae is mainly based upon characters of pigments, flagella and reserve food material.

Eleven classes proposed by Fritsch are as follows:

Class 1. Chlorophyceae (Isokontae)

1.Generally algae are fresh water and chlorophyllous thallophytes.

2.Chlorophyll b and carotenoides are present in chloroplasts.

3.The cell wall is made up of cellulose and food is synthesized in the form of starch.

3.Motile spores and cilia are found.

4.The sexual reproduction is isogamous, anisogamous and oogamous types.

Important genera are:

Chlamydomonas, Volvox, Chlorella, Ulothrix, and Spirogyra.

Class 2. Xanthophyceae (Heterokontae)

1.These are green-yellow in colour due to the presence of xanthophyll.

2.The pyrenoids are absent and food is in the form of fat.

3.Chlorophyll e is found in place of chlorophyll b.

4.The sexual reproduction occurs by fission of two gametes having cilia of different length.

Important genera are:

Microspora, Vaucheria, Protosiphon.

Class 3. Chrysophyceae

1.In these organisms, besides chlorophyll, yellow-green pigments are present.

2.Phycocyanin is the colouring material. Plants are unicellular, multicellular or colonial.

3.The cell wall is present in the form of two overlapping halves.

4.Stored food is in the form of oil or insoluble carbohydrates, leuosin.

Example:
Chrysosphaera.

Class 4. Bacillariophyceae (diatoms)

1.These are yellow-green-brown or olive green in colour.

2. Diatomin is the colouring material which is found in chloroplast.

3. Pyrenoids are also present. These are unicellular and non- motile.

4.Chlorophyll c is present in place of chlorophyll b.

Example:

Pinularia, Navicula, Fragilaria.

Class 5. Cryptophyceae

1.These are red, green-blue, olive-green or green coloured algae.

2.Each cell consists of two large chloroplasts in which pyrenoids are present.

3.They occur in fresh water and sea.

Example :

Cryptomonas

Class 6. Dinophyceae

1.These are dark yellow or brown or red coloured algae.

2.Stored food is oil or starch.

3.Large nucleus and many discs like chromatophores are present.

Example:

Peridinium.

Class 7. Chloromonadineae

1.These algae are bright green or olive green colour. Xanthophyll is in abundance.

2.Fatty compounds acts as food. Reproduction takes place by longitudinal division.

Example:

Vacuolaria.

Class 8. Eugleninae

1.They resemble microscopic animal due to presence of naked ciliated reproductive organs.

2.Chlorophyll is present.

Example:

Euglena.

Class 9. Phaeophyceae

1.These are yellow-brown coloured marine algae.

2,Fucoxanthin pigment is the main colouring material, chlorophyll a and carotene are also found and chlorophyll c is found in place of Chlorophyll b.

3.Storage food materials are laminarian, mannitol and fats.

4.Zoospores are bi-ciliated and one cihum is larger.

5.There is no resting period in zygote.

Examples:
Fucus, Sargassum.

Class 10. Rhodophyceae

1.These are red in colour due to phycoerythrin pigment.

2.Phycocyanin, chlorophyll a, carotene and xanthophyll are also present in small quantities.

3.Storage food is floridean starch. Non- motile cells are found during reproduction.

4.These are commonly found in sea water.

5.Sexual reproduction is oogamous type. Chlorophyll d is present in place of chlorophyll b.

Examples:
Polysiphonia and Batrachospermum.

Class 11. Myxophyceae (Cyanophyceae)

1.The nucleus is of prokaryotic type.

2.The blue colour is due to the presence of phycocyanin pigment but phycoerythrin, chlorophyll b and carotene are also present in small quantity.

3.The accessory pigment (i.e., phycocyanin, phycoerythrin and allophycocyanin) contains structure is called phycobilisomes.
4.The chlorophylls are found in thylakoids.

5.Storage food is myxophycean starch and protein granules.
6.There is no motile stage in these algae.

7.Sexual reproduction is absent. Mainly these algae are unicellular or filamentous.

Examples:

Nostoc, Oscillatoria, Anahaena, Lyngbya, Plectonema.