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DEPARTMENT; PHARMACY

COURSE; BIO 102

MATRIC NO; 19/MHS11/130

ANSWERS

1. In 1883, A.W. Eichler gave a system of classification for the whole plant kingdom. It is a traditional system as well as a phylogenetic system of classification of plants.

Eichler classified the plant kingdom into two sub-kingdoms. They are cryptogamae and phanerogamae

A. Cryptogamae (kryptos= concealed, gamos=marriage)

The cryptpgamae are flowerless and seedless plants. They are simple plants like algae, mosses and ferms which do not produce flowers, fruits and seeds. Cryptogams are consideredas lower plants. They have hidden sexual organs.

Division I: Thallophyta
- Class I: Algae - Cyanophyceae
  - Diatomeae
  - Chlorophyceae
  - Pharophyceae
  - Rhodophyceae
- Class ii: Fungi - Schizomycetes
  - Eumycetes
  - Lichenes

Division ii: Bryophyta
- Class I: Hepaticae
- Class ii: Musci

Division iii: Pteridophyta
- Class I: Equisetinae
- Class ii: Lycopodinae
- Class iii: Filicinae

B. Phanerogamae/ Spermatophytes

Comprise those plants that produce seeds. Hence the alternative named seed plants. They have visible sexual organs.

Division I: Gymnospermae (gymnos- naked seeds) e.g conifers, cycads

Division ii: Angiospermae

Class I: Monocotyleae

Class ii: Dicotyleae

2a. Direct use of algae as food for man - 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.

b. As source of mineral - The marine algae are the richest sources of vitamin. The vitamins A, B and E are found abundantly in sea weeds

c. Medicines and minerals - several diseases caused by vitamin deficiency such as asthma, tooth decay etc may be eradicated, if floor of the sea weeds is added to the food. According to Dr. Weston, iodine is the most important element to enable the thyriod glands to secrete the thyrosin which contain 60% iodine. Sea weed are the best source of iodine for human being.

d. As source of agar

e. For the manufacture of iodine

f. For the manufacture of soaps and alums

g. As a fodder for hens and milk cattle

h. Manufacture of potash

I. Used as fertilizers

j. Manufacture of light weight buildings

k. Manufacture of paper

l. Ornamental uses(spirogyra)

m. Nitrogen fixation by blue-green algae

3. Unicellular form of algae are also acellular algae as they function as complete living organism. Unicellular forms are common in all the groups of algae except Rhodophyceae, phaeophyceaea and charophyceae. The unicells may be motile or non- motile

I. The motile unicells are either rhizopodial or flagellated

The rhizopodial forms lack rigid cell wall and have cytoplasmic projections that help them in amorbiod movement e.g chrysamoeba

The flagellated unicells resemble the motile gamete and zoospores. The flagella funtion as the organ of locomotion varying in number and

type in different group. The flagellated unicells are found in many groups of algae e.g chlamydomonas, euglena

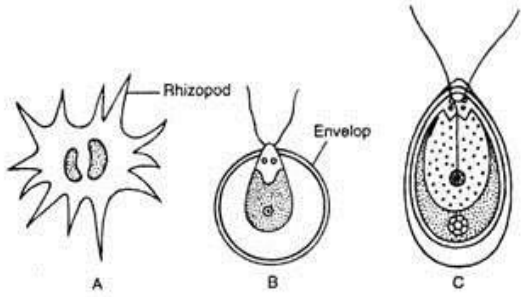

Fig. 3.1 : Unicellular motile algae : A. *Chrysamoeba*, B. *Phacotus*, and C. *Chlamydomonas*

Ii. The non-motile cells may be spiral filament as found in spirulina. The coccoid unicellular algae are the simplest form of algae found in cyanophueae, chlorella

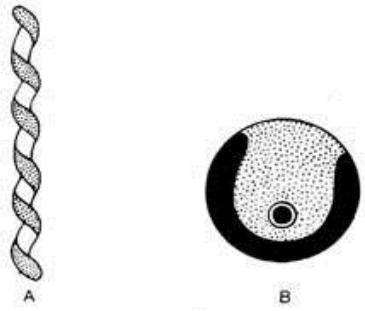

Fig. 3.2 : Unicellular non-motile algae, A. *Spirulina*, and B. *Chlorella*

4. Vegetative reproduction

In this type, any vegetative part of thev thallus develops into new individuals. It does not involve any spore formation and there is no alteration of generations. It is the most common method of reproduction in algae.

Cell division or fission

It is the simplest method of reproduction. The unicellular forms of algae commonly reproduces by the simple process often called binary fission as found chlamydomonas, diatoms etc. In this method, the vegetative cells divide mitotically into two daughter cells, those finally behave as new individual.

5. Colonial forms are classified into two;

Volvox	Synura
Reproduction is both sexual and asexual	Reproduction is sexua

Spherical colonies of up to 50,000 cells	Few cells of colonies

6. Spirogyra (water silk, blanket weed, mermaid's tresses)

It is filamentous charophyte green algae of the order zygnematales, named for the helical or spiral arrangement of the chloroplasts. It is commonly found in freshwater habitats, and there are more than 400 species of spirogyra in the world.

Spirogyra can reproduce both sexual and asexual in vegetation reproduction, fragmentation takes place, and spirogyra simply undergo intercalary cell division to extend the length of the new filaments. Spirogyra is very common in relatively clear eutrophic water, developing slimy filamentous green masses. In spring spirogyra grows underwater but with sunlight they produce large amount of oxygen. Spirogyra has a cell wall, nucleus, pyrenoid and spiral chloroplasts.