

KINGDOM MONERA AND PROTISTA : SIMPLE ALGAE

- Kingdom Protista is the first of four kingdom of domain eukaryotes that we must examine :

Characteristics of Algae :

1. Algae are photosynthetic , eukaryotic organisms typically lacking multicellular sex organs .
2. The algae (singular : alga) are simple , chlorophyll , bearing plants .
3. They are mostly unicellular microorganisms , others are aggregations of similar cells .
4. Algae are heterogeneous group .
5. They are vary in size , habit, habitat and reproductive processes .
6. The size ranges from microscopic to several meters in length (sea weeds).
7. The study of algae is called phycology .
8. Algae are abundantly present in sea water , fresh water, in damp soil, on rocks, stones, bark of trees, on plants and animals .

Algae occur where there are sufficient light moisture and nutrients .

9. The principal food for aquatic organisms are group of microorganisms called phytoplankton .
10. The following are the important algae of microbiology importance :

Oscillatoria	polysiphonia	chlamydomonas
Nostoc	gelidium	spirogyra
Anabaena	volvox	euglena

11. General structure of algae :

- 1- The plant body of algae is called thallus. It does not show differentiation root, stem, leaf and true tissues .
- 2- The study of algae is called algology or phycology .
- 3- The common examples of algae are chlamydomonas, volvox , chlorella, spirogyra, oedogonium, ulva etc.
- 4- Algae are aquatic or terrestrial , but most of them are aquatic, the terrestrial form live in moist places .
- 5- The aquatic algae may be marine or fresh water forms the free living forms are called plankton . they are either free living or attached forms .
- 6- A few algae are parasites. Some algae live as symbionts with fungi to form lichens .
- 7- The algae are unicellular or multicellular forms. Chlamydomonas is an unicellular alga , spirogyra is a multicellular alga .
- 8- The multicellular algae maybe in the form of colonies E.g. volvox, or in the form of filaments E.g. spirogyra .
 1. The filamentous alga are either simple or branched .
 2. The simple filamentous alga consists of a single row of cells E.g. ulothrix , spirogyra , etc.
 3. The simple filament may be free floating or attached by a hold fast .
 4. The simple filaments of blue green algae are called trichomes .
- 9- In some algae, the plant body (thallus) is not differentiated into root , stem and leaf-like structures E.g. sargassum , facus , laminaria , etc.
- 10- The algae maybe prokaryotes or eukaryotes . all the blue green algae are prokaryotes .

In prokaryotic algae a nucleoid (nuclear material without nuclear membrane) is present in the cytoplasm in eukaryotic algae nucleus is present .

11- The cell consists of :

1. A cell wall .
2. Plasma membrane .
3. Cytoplasm .
4. Nucleus

- The cytoplasm contains mitochondria , plastids , ribosomes Golgi complex , endoplasmic reticulum , etc.
- The plastids (chromatophores) contain pigments . the pigments are three types , they are :
 - Chlorophylls
 - Carotenoids
 - Biliprotein or phycobilins .

12- Some algae possess flagella , these algae are motile . the algae are autotrophs , they can synthesize their own food from inorganic substances with the help of sunlight this process is called photosynthesis .

13- Reproduction occurs in three ways , namely vegetative reproduction , asexual reproduction and sexual reproduction .

Reproduction vegetative occurs by fragmentation , asexual reproduction occurs by the production of spores, and sexual reproduction occurs by production of gametes .

14- Economic importance of algae :

1. Food for man : more than hundred species of algae form the food for man e.g. chlorella , spirogyra , vlva , oedogonium , etc.

2. Food for animals : the phytoplankton form the producers and they serve as the main source of food for the aquatic organisms.
3. Industrial products : a number of industrial products are obtained from algae e.g. agar agar , algin , mannitol , minerals , vitamins , etc.
4. Soil fertility : algae are used to increase soil fertility . e.g. anabaena , nostoc .
5. Medicines : a number of medicines are obtained from algae , e.g. agar, carrageenan , alginic acid , chlorellin , etc.

The End