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COLLEGE: MEDICINE AND HEALTH SCIENCES

DEPARTMENT: PHARMACY

LEVEL: 100 LEVEL

COURSE: BIO 102

ASSIGNMENT ON PLANT DIVERSITY

1. Classification of plants according to Eichler’s grouping of 1883, we have

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| DIVISION | CLASS |
| Thallophyta | Phycotinae(Algae)  Mycotinae(Fungi) |
| Bryophyta | Hepaticae(Liverworts)  Musci(Mosses) |
| Pteridophyta | Psilotinate(Psilotum)  Lycopodinae (Lycopodium, Selaginella)  Equisetinae(Horsetails)  Filicinae(Ferns) |
| Spermatophyta | Gymnospermae(Gymnosperms)  Angiospermae(Angiosperms) |

1. Importance of Algae to man

(i). It acts as source of food for fish, livestock and people.

(ii). It is used as thickening agents in ice-cream and shampoo.

(iii). They have high iodine content and are used to prevent goitre.

(iv). It yields agar which is used in the food industry to stabilize pie fillings and preserve canned foods.

(v). They are highly nutritious due to presence of high protein content and concentration of minerals.

(vi). Brown algae produces alginic acid which is used to stabilize emulsions and suspensions.

(vii). They contain special chemicals which help to cure and prevent illnesses.

1. Unicellular form of Algae

This type of algae can also be referred to as Acellular algae. They have the ability to function as a complete living organism. This is because they have they have the necessary organelles needed in order to survive. They may either be motile or non-motile. All groups of algae have unicellular forms in common except Rhydophycaea, Phyaeophycaea and Charophycaea. Taking ***Chlamydomonas*** into consideration as a unicellular form of green algae, it is motile and use flagella as the structures for mobility. It contains organelles such as; nucleus, mitochondria, pyrenoid etc.

1. Reproduction of Unicellular algae

In the unicellular form of algae mentioned above(*Chlamydomonas*),

reproduction may seem to be either vegetative(asexual) or sexual.

**Vegetative reproduction** is often called Binary fission or Mitotic divisions. It is the simplest method of reproduction for unicellular forms of algae. It involves the cell undergoing mitotic divisions leading to two nuclei, which results in the release of two daughter cells as new individuals. This is the asexual reproduction.

**Sexual reproduction** of haploid cells may occur due to environmental conditions e.g. lack of nutrients. Two cells of equal genetic material(n-haploid) come together and fuse to produce a gamete(2n-diploid). The zygote the undergoes two successive divisions, the first division restores the haploid condition leading to two nuclei and the second division each haploid nucleus undergoes another mitotic division. This produces four cells with equal n-quantity as that of the parent cells.

1. The colonial forms of algae are;

(i). Pandorina

(ii). Volvox

Differences between Pandorina and Volvox

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| Pandorina | Volvox |
| (i). It has unicellular motile thallus. | It has multicellular motile thallus. |
| (ii). It is a genus of green algae. | It is a more complex form of Pandorina(also a genus of green algae). |
| (iii). Sexual reproduction is Anisogamous. | Sexual reproduction is Oogamous. |
| (iv). It may contain 16 cells in the colony. | Its number of cells may run into thousands. |

1. Complex form of Algae

In these set of plant bodies, their cells are differentiated to perform various functions. They possess more massive bodies and organs for a particular function. Under this form of algae, we would consider a genus of brown algae known as ***Fucus***.

***Fucus***

It is a genus of brown algae whose species are often found on rocks in the intertidal zones of the sea shores. The body of the plant is flattened, dichotomously-branched thallus with a mid-rib, a vegetative apex and a multicellular disk with which plant is attached to a rock surface. The body has air bladders which is believed to aid the plant to float on the water. It varies in size from a few centimetres to about 2-metres in length. They also vary in terms of whether the sex cells are found in the same sexual chamber or in different sexual chambers on different plant bodies.

Sexual reproduction is Oogamous, and the sex cells are produced in the conceptacles which have openings (ostioles) on the surface of the thallus.