

# LICHENS

The lichens are a large group of dorsiventral, non-vascular, thalloid, autotrophic plants. They are peculiar dual or composite organisms produced by the intimate association of two organisms; a fungus also called as mycobiont and an alga also called as phycobiont. These two organisms live together in intimate connection forming a compound thallus called a consortium.

## OCCURENCES-

Lichens are cosmopolitan. They may grow on leaves, barks of trees, bare rocks, soil and many other objects. Lichens grow in exposed rocks of desert, on the sea-shore as well as near volcanoes.

### **Few examples of lichen-**



*Xanthoria parietina*



*Peltigera canina*



*Usnea subfloridana*



*Cladonia floerkeana*

## **STRUCTURE OF LICHENS-**

On the basis of external structures, lichens are divided into 5 groups:

1. Crustose lichen
2. Foliose lichen
3. Fruticose lichen
4. Leprose lichen
5. Filamentous lichen

- **CRUSTOSE LICHEN**-The simplest form of lichen is a crust on the surface. It is flat, thin, usually without any distinct lobes. It is just like a thin layer or crust closely attached by the whole of its lower surface to stones and rocks, bark and similar hard substrata and thus the crustose lichen appears to be painted on. Normally it is impossible to separate the thallus from the substratum.



*Lecanora chlorotera*



*Psora decipiens*

2. **FOLIOSE LICHEN**- Foliose lichens have a sheet like, dorsiventral structure, and are attached to the rocks and twigs by means of rhizoid like outgrowths called rhizines. Externally they look like that of crinkled and twisted leaves.



*Parmelia sulcata*

- **3. FRUTICOSE LICHENS-** Fruticose lichens have a much branched, cylindrical or ribbon - like thallus, which is either upright or pendulous bushy structure which provide shrubby i.e. twig- like appearance.



*Usnea flammea*

**4. LEPROSE LICHEN:** This type is the simplest, here the thallus organization is very simple. This type of lichen-thallus grows superficially over the substratum and provide a powdery appearance .



*Lepraria incana*

**5. FILAMENTOUS-**In this type of lichen, algal partner is dominant. The algal partner is well developed and filamentous, and is covered by few fungal hyphae only.

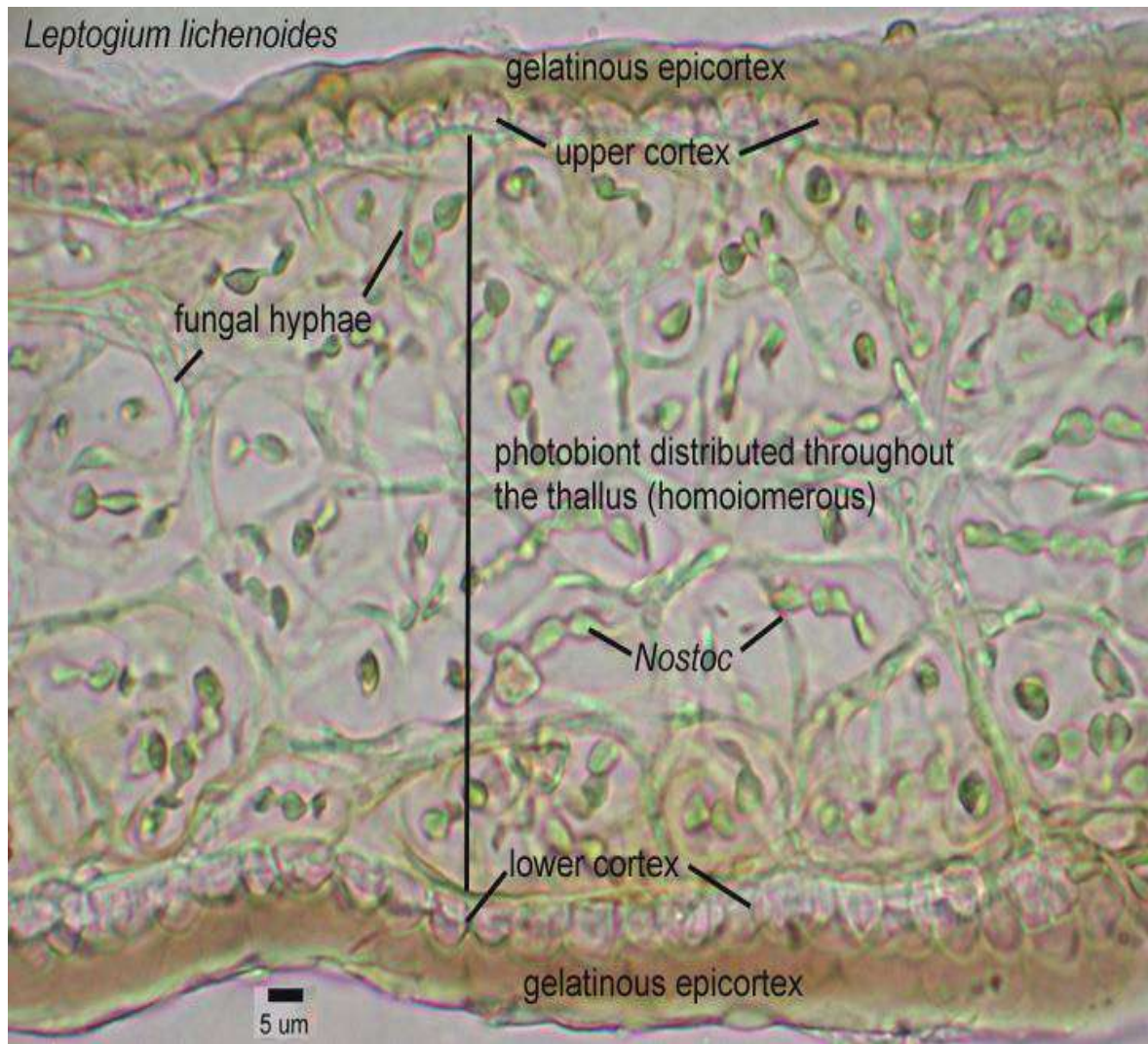


*Racodium rupestre*

On the basis of internal structure of thallus, the lichens are divided into two groups, namely;

1. Homoimerous lichen thallus
2. Heteromerous lichen thallus

1. HOMOIOMEROUS LICHEN THALLUS-This kind of thallus shows a simple structure with little differentiation. It consists of a loosely interwoven mass of fungal hyphae with algal cells equally distributed throughout.



*Leptogium lichenoides* T.S.

## 2. HETEROMEROUS LICHEN THALLUS:

This kind of lichen thallus exhibit considerable differentiation and layered structure. The algal component in a heteromerous thallus is restricted to a specific zone or layer.

A vertical section through the heteromerous thallus reveals 4 distinct zones :-

- (i) **Upper cortex:** The fungal hyphae in this region grow more or less vertically and are compactly arranged to produce a tissue like layer.
- (ii) **Algal zone:** It is the blue green or the green zone which lies immediately beneath the upper cortex. It consists of a tangled

network of loosely arranged interwoven fungal hyphae with the algal cells intermixed with the fungal hyphae.

- (iii) **Medulla:** It forms the central core of the thallus. It is less compact and consists of loosely interwoven hyphae with larger spaces between them in certain regions. The fungal hyphae run in all directions.
- (iv) **Lower cortex:** It forms the lower surface of the thallus and is composed of densely compacted hyphae. Rhizine often arise from the surface of the lower cortex and penetrate the substratum to function as anchoring organs.

