B.Sc. Botany – 3rd SEM

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Peziza

Systematic Position

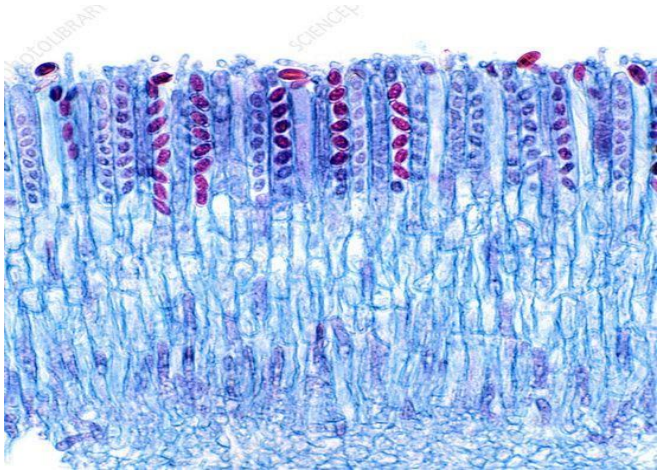
Kingdom: Fungi
Division: Ascomycota
Class: Ascomycetes
Series: Discomycetes
Order: Pezizales
Family: Pezizaceae
Genus: *Peziza*

Habitat

- Peziza is popularly known as **cup fungi** because of its **cup shaped apothecia**.
- They are mostly perennial in nature.
- They grow **saprophytically** on animal dungs **(coprophyllus**), humus, plant or rotten wood etc.
- The common Indian species of ***Peziza*** are ***P. catinum, P. repanda, P. bodia, P. postulata, P. citrine, P. geniospora, P. fructigena, P. darjeelensis, P. vesiculosa etc.***
- The species *Peziza vesiculosa* is considered poisonous. It has noticeably larger cups.

Vegetative Structure

Thallus

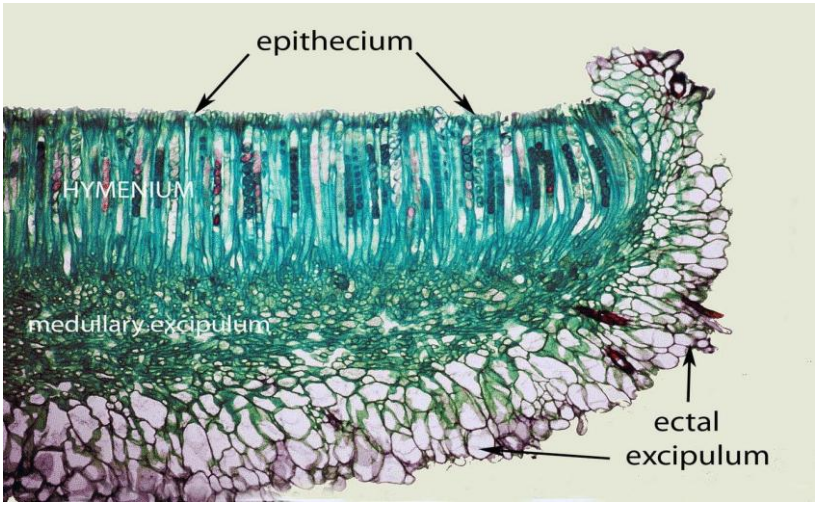


- It is represented by an extensively branched septate mycelium which normally grows inside the substratum
- The mycelium is well developed, and is made up of a thick network of hyphae.
- The hyphae is septate and branched and the cells are uninucleate
- The hyphae are not visible, they usually remain hidden as they form dense and complex networks within the substratum (dung, wood, humus rich soil) they grow upon.
- Hyphal cells are short, uninucleate and absorb nutrition through their entire surface.
- The mycelium forms cup shaped fruiting bodies called ascocarp or apothecium. They lie well above the surface and are clearly visible.

Reproduction

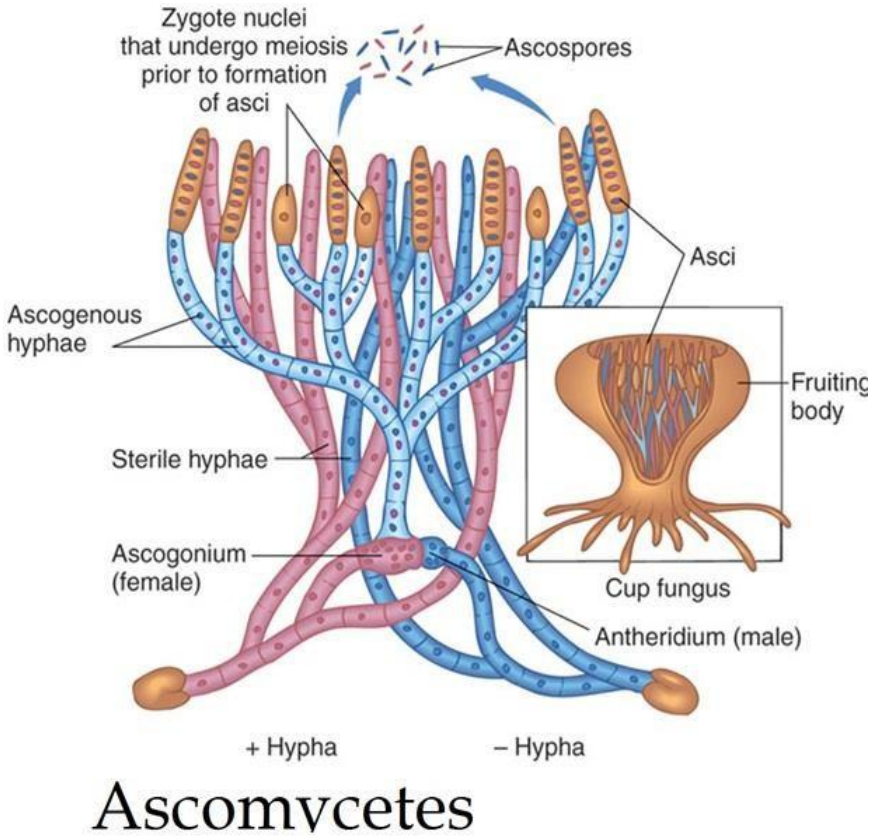
Asexual Reproduction

Only a few species e.g., *P. repanda* and ***P vesiculosa*** form **ellipsoidal conidia** at the tips of short, branched or unbranched conidiophores.



Sexual Reproduction

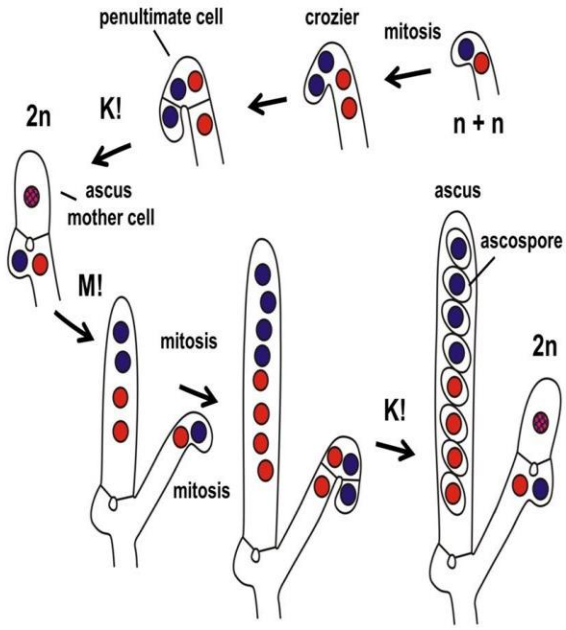
- Peziza does not form any sex organ or gametangia
- Sexual union here is called **Somatogamy.**
- First, the vegetative hyphae are grouped together to form a spherical tangled mass of hyphae with a small opening on the upper side.
- In the center of this spherical mass, some hyphal cells copulate.
- The nucleus of one cell passes into the other adjoining cell through the central perforation of the septum and thus several binucleate cell are formed.
- From these binucleate cells large number of ascogenous hyphae is produced. The cells of ascogenous hyphae are also binucleate



Development of Asci and Paraphysis (Hymenium region)

- In *P. cantium* and several other species, the tip of ascogenous hyphae form typical **crozier leading to the development of asci.**
- In *P. vesiculosa*, *P. tectoria* and others, crozier formation does not occur.
- In these cases, binucleate cells directly form asci

- In between the developing asci numerous sterile hyphae called paraphyses grow.
- Both asci and paraphyses make the hymenial layer which expands and ruptures the cortical hyphae present above.
- This results in **further widening of the apothecial opening.**



Morphology of Apothecium

- **Apothecia are the fruiting bodies or ascocarps** formed by mycelium. They grow above the substratum i.e., epigial ascocarp.
- Apothecia of peziza are **cup shaped** and are not differentiated into stipe and pileus
- They are large or small, soft, fleshy, sessile or sub-sessile and range from 1-5 cm in diameter, in different species.
- The cups or apothecia are white, cream or buff coloured from outside and interiorly the cups are brown or bright scarlet-red in colour.
- The interior brown lining is called hymenium and contains a large number of asci interspersed with sterile paraphyses.

Anatomy (VS.) of Peziza apothecium

The Peziza apothecium is cup shaped and the cup is made up of mycelium.

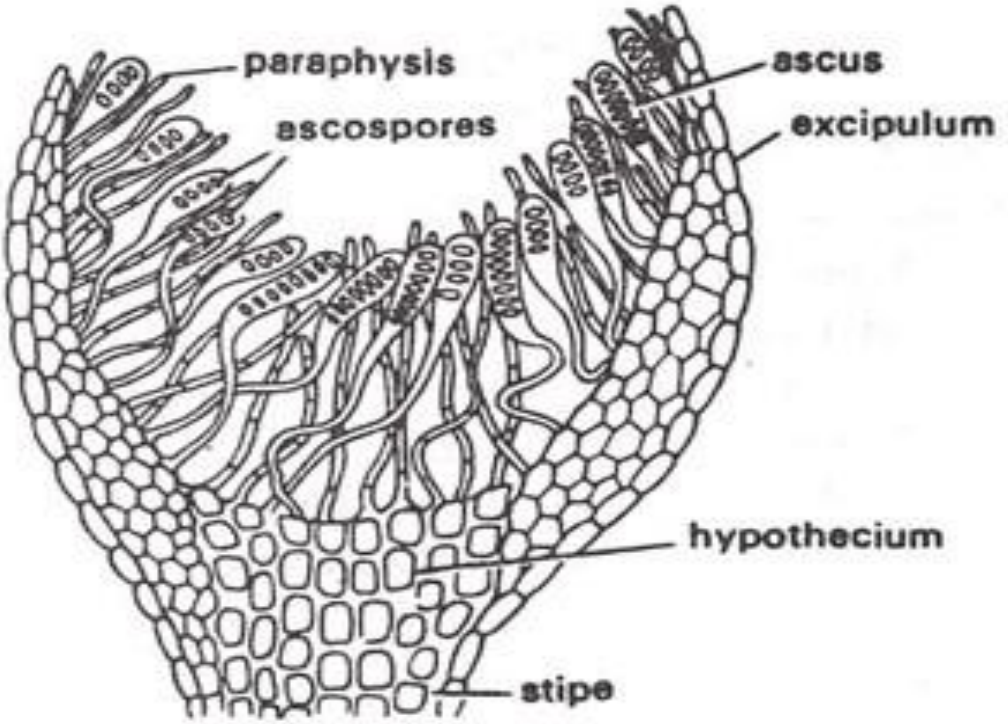
The cup shows three distinct regions

a) Hymenium - It is the uppermost region representing the inner lining. It consists of numerous

asci arranged in a layer in palisade like manner and the paraphyses cover the entire inner surface of apothecium. Hymenium is the fertile layer. The paraphyses are sterile hyphae and are intermixed with asci.

b) Sub-hymenium- It lies beneath the hymenium and consists of fairly compact hyphal mass which gives rise to asci and paraphyses.

c) Hypothecium or excipulum- It is the outermost or basal region, made up of sterile loosely packed fungal mycelium forming a pseudoparenchyma. The hypothecium remains attached to the underlying mycelium present in the substratum. The asci and paraphyses are parallel to each other and perpendicular to the surface of hymenium due to the fact that they are positively phototropic and grow towards the light.



Ascus

- Each ascus is elongated, cylindrical, club-shaped structure containing 8-ellipsoidal ascospores.
- The ascospores are arranged linearly and placed obliquely inside the ascus.
- Each ascospore is unicellular, uninucleate, thin walled, ellipsoid or oval structure produced as a result of sexual reproduction.
- They are liberated from the ascus with a force through the terminal pore and finally

disseminated by wind

- On germination, ascospore form mycelium, which subsequently develops the ascocarps (fruiting bodies).
- The duration of spore formation is about 40 days and shedding of spores takes place between 14^0-22^0C continuously day and night.

Life cycle of Peziza