

Mycology part – 5

5. BASIDIOMYCOTINA

- It is a large phylum that includes forms commonly known as mushrooms, boletes, puffballs, earthstars, stinkhorns, birds-nest fungi, jelly fungi, bracket or shelf fungi, and rust and smut fungi.
- The common name bird's nest fungus includes species of the genera Crucibulum, Cyathus, and Nidularia of the family Nidulariaceae
- Both parasite and saprophytic.
- Some of the groups are mycorrhizal.
- Filamentous fungi composed of hyphae.
- Reproduce sexually by the formation of specialized club-shaped end cells called basidia that normally bear external spores (usually four).
- specialized spores in this phylum called basidiospores .
- the basidiospores on the basidium is naked in nature or inside a vegetable composition called basidiocarp.
- the threaded fungal(hyphae) in basidiomycota forming a clamp connection between adjacent cells, which are characteristic of this phylum.
- **Dolipore Septum:** characteristic feature of Basidiomycota, the dolipore septum. It is a mechanism to stop nuclear movement from one cell to the other.

VEGETATIVE STRUCTURE

The mycelium of most basidiomycetes passes through three distinct stages of development: the primary, the secondary, and the tertiary – before the fungus completes its life cycle

E ▶ ENTRI

- **Primary mycelia:** Also known as **homokaryon** to emphasize the fact that all the nuclei are identical, usually develops upon the germination of a basidiospore.
- **Secondary mycelia:** Also called **heterokaryon**. Usually this type of mycelia is formed due to the fusion of two uninucleate cells of the compatible homokaryotic mycelia. So a binucleate cell is produced that develops later into secondary mycelia. Then, further divisions produce mycelia in which every cell is dikaryotic.
- **Tertiary mycelia:** The tertiary mycelia of basidiomycetes is represented by the organized, specialized tissues that comprise the basidiocarps (fruiting body).

ASEXUAL REPRODUCTION:

- by budding or Fragmentation of the mycelium or
- by the formation of conidides or
- by Urediospores

SEXUAL REPRODUCTION:

- **Distinguishable sex organs are not formed in Basidiomycota except in Puccinia**, where spermatia and receptive hyphae are distinctly the male and female structures.
- The **plasmogamy, karyogamy and meiosis**, which comprise sexual reproduction,
- Plasmogamy occurs when secondary mycelium is initiated.
- **Karyogamy is delayed due to the extensive dikaryophase.**
- Eventually, the karyogamy occurs in the basidia formed by the terminal cells of the dikaryotic secondary mycelium, or in teliospores, and the promycelium.
- Segregation of characters occurs during the meiotic division, which follows karyogamy.

- Four haploid nuclei are formed.
- **Sterigmata** arise as little outgrowths; their tips swell, into each of which a haploid nucleus migrates. The swellings develop into basidiospores.
- The **teliospores** germinate and form a **club-shaped promycelium** in which karyogamy and meiosis occur.
- It becomes **septate and four cells formed**, each bearing a basidiospore on a short pointed sterigma.
- The **karyogamy and meiosis**, sometimes, **occur in the teliospore**.
- Thus, the teliospore and the promycelium jointly perform the function of a basidium.
- The germinating teliospore is called **hypobasidium**, and promycelium, the epibasidium.
- Both jointly form the basidial apparatus.
- The teliospore before germination is regarded as encysted probasidium.

ECONOMIC IMPORTANCE:

- Live parasitic on plants caused by plant diseases such as rust diseases and smut diseases .
- Some species are used as food for humans around the world, such as fungus Mushroom .
- Some species are toxic and deadly to humans called Toadstool, such as Amanita sp. Which is called the Death Angel.

6. DEUTEROMYCOTA

- Fungi **imperfecti**

ENTRI

- Mycelium septate and profusely branched
- Cells uninucleated and dolipore septum present
- They only reproduce through Asexual reproduction.
- Asexual reproduction through **conidia formation**.
- Asexual frutification: free conidiophores, synnema, sporodochia, pycnidia, acervuli
- **Sexual stage is not observed.**
- **Incomplete life cycle**

CERCOSPORA

- Pathogenic parasite
- Attacks ground nut, cotton, beet, pulses etc..
- *Cercospora personata* and *C.arachidicolo*- cause leaf spot in ground nut, commonly known as tikka diseases.