

OnLine Study Material (e-content)

- College: S.S. College, Ichambad.
- Department: Botany
- Subject: ~~Botany~~ Fungi
- Topic: General features
- Medium of Teaching: WhatsApp & College website.

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- Teacher's Name: Dr. S.S. Sharma
- Class - B.Sc. Part-I
Bot. H & Biotech. S

General Features OF Fungi

According to Bessey, Fungi are "chlorophyllless non-vascular plants." They are achlorophyllous thallophytes. Study of Fungi is known as mycology (mykes = mushroom; logos = to study). H.A. de Bary is known as "Father of modern mycology" and "Father of Plant Pathology". Sir E.J. Butler is regarded as the "father of Indian mycology". Other prominent Indian mycologists are — K.C. Mehta; B.B. Mukherjee, T.S. Sadasivan, C.V. Subramanian ...

1. Distribution — Nearly 1,20,000 species of fungi are known which are widely distributed.

2. Habitat — Ubiquitous - i.e.

- on dead and decaying substance — Saprophytes
- on tree bark — Corticolous
- on dung — Coprophilous
- on wood — Epixylic
- on burnt wood — Xylophilous
- In very dry atmosphere — Xerophilic
- on side host tissue — Endophyte
- Fungi growing apically on root apices — Rhizomorph
- Fungi growing in symbiotic association between roots of higher plants and fungal hyphae — Mycorrhiza.

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3) Body - Thalloid. Thallus consists mass of tubular hyphae (Gr. hypha = web) called 'mycelium'. It is multicellular, filamentous & fleshy, achlorophyllous, Septate (septae has a central pore) or aseptate coenocytic and heterotrophic.

• Cell Wall - Rigid, chitinous but in oomycetes it is made up of cellulose.

• Nutrition - Absorptive, saprophytic or parasitic i.e. heterotrophic.

• Reserve food - Glycogen.

4) Growth Pattern :- distinctive, hyphae are able to develop the whole mycelium/thallus.

5) Mitotic division :- Intra nuclear.

6) Reproduction :-

It is of 3 types :-

i) Vegetative reproduction - It takes place with the help of -

- a) Fragmentation
- b) Fission
- c) Budding
- d) Sclerotia

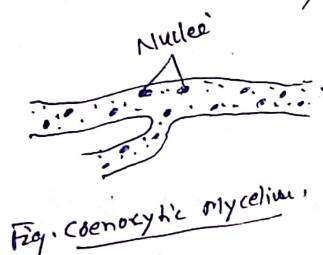


Fig. Coenocytic mycelium.

ii) Asexual Reproduction :-

- a) By spores - In Rhizopus, Mucor etc.
- b) By oidia - Mucor etc.
- c) By chlamydospores - Mucor, Ustilago etc.
- d) By conidia - Penicillium, Aspergillus etc.

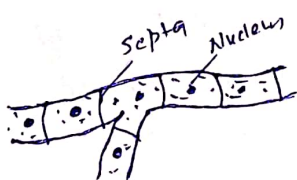


Fig. Septate mycelium.

→ P.T.O.

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iii) Sexual Reproduction:-

It takes place by fusion of compatible nuclei which involves -

- Plasmogamy -
- Karyogamy, and
- Meiosis.

* Sexual Spores are -

- Ascospores - Single celled spore produced in Ascus.
- Basidiospore - Produced on Basidia
- Zygospores - Thick walled spores formed by the fusion of gametangia
- Oospores - Formed within oogonium.

On the basis of sexual compatibility fungi are

- Homothallic → ♂ and ♀ gametes born on the same thallus, or

- Heterothallic - Here male and female gametes are produced on different thallus.

Heterothallism was discovered by Blakeslee (1904) in *Mucor*.

* Degeneration of sex-organs:- Fungi exhibit a marked reduction in sex as we proceed from the lower to higher forms. There is gradual reduction of sex-organs in fungi.

* Types of Sexual Reproduction in Fungi -

1) Isogamous:- Here fusing gametes are morphologically similar. They may or may not

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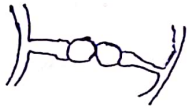
differentiated physiologically. Example - Synchytrium.



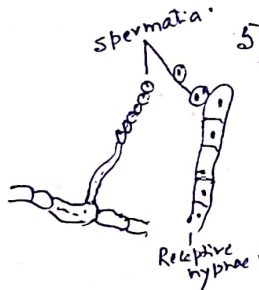
2) An isogamous :- It is somewhat advance than isogamous type because the fusing gametes are morphologically not similar. Example - Allomyces.



3) Oogamous type - It is highly evolved type of sexual reproduction where the sex organs and gametes are well differentiated. Example - Monoblepharis, Penicillium, Aspergillus etc.



4) Gametangial Copulation - It is a type of isogamous sexual reproduction in which gametes are not released and two morphologically similar gametangia fuse together. Eg. Mucor, Rhizopus.



5) Spermatization :- In higher basidiomycetes (eg. Puccinia) the sex organs are completely absent. A nucleus of a spermatium of one strain pairs with the nucleus of opposite strain in a cell of the fungal mycelium to bring dikaryotisation.

6) Somatogamy :- In many ascomycetes and basidiomycetes, any two vegetative cells can fuse together.

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