

Mucor

Classification:

Kingdom: Fungi

Division: Zygomycotina

Class: Zygomycetes

Order: Mucorales

Family: Mucoraceae

Genus: Mucor

- Mucor is saprophytic fungi. It grows on dead and decaying organic material such as cattle dung. It spoils human food like bread, jam, jelly, pickles etc.
- Mucor is composed of thread-like white cottony non-septate (coenocytic) mycelium. Each hypha is tubular, cylindrical and profusely branched. It is multinucleate and unicellular.
- The prostrate growing mycelium is called vegetative mycelium. The tip of vegetative mycelia are much branched and produce hook-like structures called hapterons. They penetrate into the substratum and absorb soluble sugar.
- Some of the mycelia arise from vegetative mycelium and project upward or erect, called as reproductive mycelia. This mycelium is involved in asexual reproduction.
- Mucor is a heterotrophic fungus, i.e. mostly saprophytic, which grows on carbohydrate-rich food material in most conditions. Certain hyphae create extra-cellular enzymes which convert carbohydrates into soluble sugar and then it is absorbed.

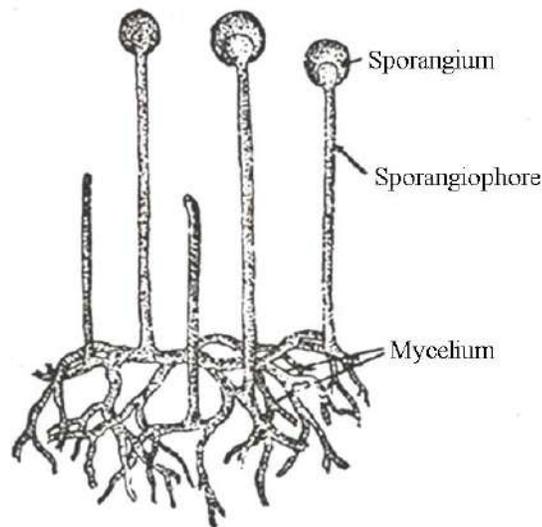


Fig: Mucor. Mycelium with sporangiophore and sporangia

Reproduction

In Mucor reproduction takes place by two methods 1. Asexual and 2. Sexual.

Asexual Reproduction

Asexual reproduction in Mycor takes place by the formation of various kinds of spores.

1. Chlamydo spores
2. Oidia
3. Sporangiospore (Aplanospore)

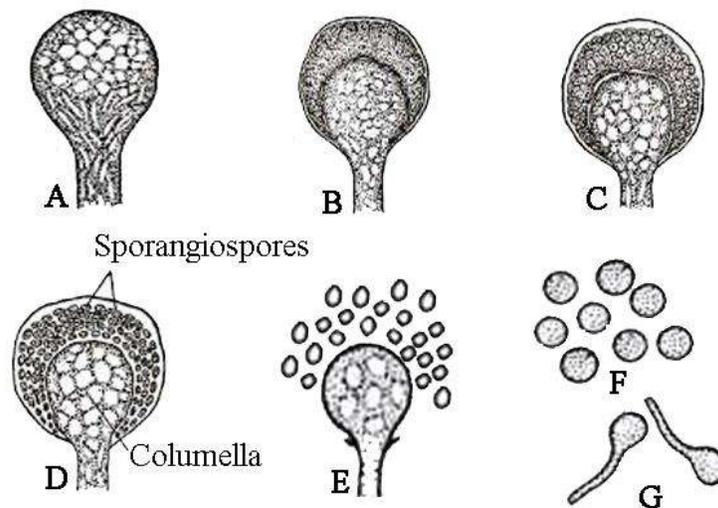


Fig: *Mucor spp.* (A-E) Development of sporangium, (E) Sporangiospores, (F) Germination of sporangiospores.

1. Chlamydo spores:

Some of the old and mature hyphae break mechanically into several fragments and become transversely septed. These fragments of septed hyphae develop a chain of thick wall cells called Chlamydo spores. They remain dormant in unfavourable conditions and germinate in favourable condition.

2. Oidia:

Oidia develop in liquid medium. In certain condition, the mycelium separates into several thin walled segments. Each segment is called oidia. Oidia after detachment develop into new mycelium.

3. Sporangiospore: (Aplanospore)

- Some of the hyphae arise from vegetative mycelium grows erect called sporangiospore. The terminal end of erect hyphae wells into knob like structure called sporangia.
- The cytoplasm of sporangia divides into two 1. The central sterile zone is called columella, 2. The peripheral fertile zone is multinucleate which divides into many small non-motile sporangiospores also called as aplanospores.
- The sporangiospores are unicellular but multinucleate. They are oval or globose in shape thin walled and non-motile. They do not have flagella.
- At maturity the sporangium dries up and its wall break down. All the spores liberated with the wind and settled down on stable substratum. They germinate in favourable condition of moisture and temperature producing germ tube and develop into new white mycelium.

Sexual Reproduction:

- In Mucor sexual reproduction takes place in two conditions 1. Heterothallic and 2. Homothallic.
- At the time of sexual reproduction two compatible mycelia of opposite strains grow towards each other. These hyphae called zygothore.
- A lateral branch develop from each zygothore with many nuclei migrate to the tip. These lateral branches are called progametangia.
- The tip of progametangia is cut by the formation of transverse septum. These terminal cells are called gametangium. Whereas the tubular part is called suspensor.
- The wall at the point of contact of opposite gametangia dissolves and only one nucleus from the both the gametangia fuse to form diploid nucleus. Other nuclei degenerate.
- The developed zygosporangium is unicellular and diploid. It is surrounded by two layered wall. Outer is thick, black and rough called exine and inner is smooth and thin called intine.
- This zygosporangium can remain active or alive for 9-10 months whenever it get favourable condition, outer exine cracks and intine comes out in the form of germ tube it is also called as promycelium.
- The diploid nucleus of zygosporangium undergoes meiosis to form four haploid nuclei. It is followed by repeated mitotic division to form large number of haploid nuclei.
- The tip of promycelium swells and develop into zygosporangium. It contain many haploid nuclei which divides and develop small wall around it and form meiospores. These meiospores are the mixture of +ve and -ve strains.
- In dry condition zygosporangium breaks up and meiospores liberated out and whenever get suitable condition and substratum germinate into new mycelium.

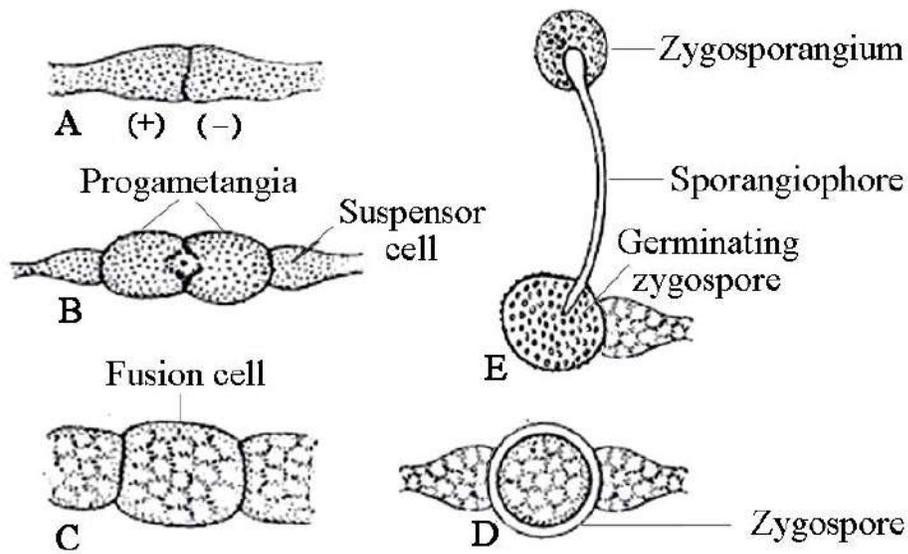


Fig: *Mucor* spp. Development of zygospore and its germination.

MVK/DBSC/Botany

Cercospora

Classification:

Kingdom: Fungi

Division: Deuteromycota

Sub-division: Deteromycetes

Class: Hyphomycetes

Order: Moniales

Family: Dematiaceae

Genus: Cercospora

- Genus cercospora is represented by 1270 species. It is parasitic fungi which cause disease in spinach, tomato, cotton, rice, chilli, beet and ground nut.
- The Tikka disease of ground nut is cause by two cercospora species i.e. *C. personata* and *C. arachidicola*
- The fungus *Cercospora* cause leaf spot disease on ground nut leaf where brownish black circular spots appear on both the surfaces. Each spot is 1-6mm in diameter.
- Mycelium is profusedly branched, hyaline, and septed. The hyphae is present external and internal side of cell. It grows through the intercellular spaces of the host tissue and derive food material with the help of branched houstoria.

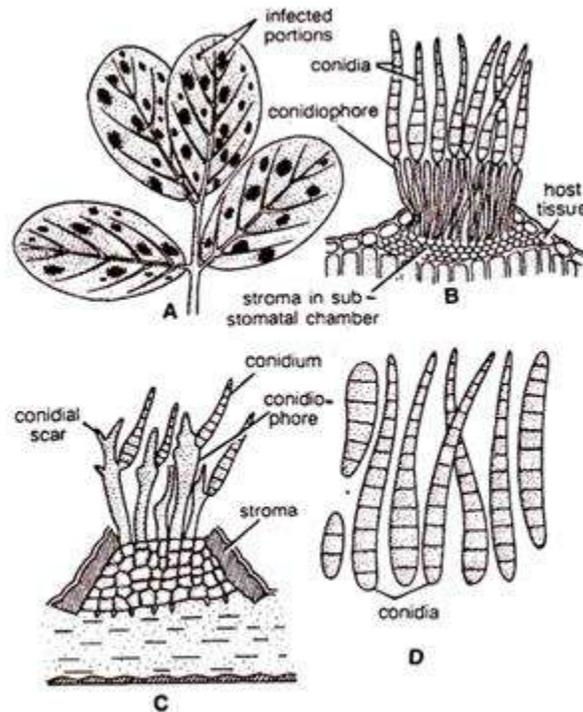


Fig. 1. (A–D). *Cercospora*. (A) Leaf spot disease of ground nut, (B) Conidiophore bearing conidia, (C) Logititudinal section of acervulus with geniculate conidiophores, (D) Conidia

Reproduction:

- *Cercospora* reproduces by only asexual method. Sexual reproduction is completely absent. Asexually it reproduces by the formation of conidia. At vegetative maturity the hyphae accumulate just below the epidermis and form a compact brown or black mass known as stroma
- Tuft of short septed thin walled and unbranched conidiophore emerge out from the stroma

- Each conidiophore produces a conidium at its apex. The growth of conidiophore remains continuous only after formation of first conidia. First formed conidium is pushed to outside and another conidium is formed at the apex.
- The conidium is straight or curved, hyaline (colourless) or transparent or coloured/pigmented, slender, narrow tapering at both ends and transversely septed.
- On detachment conidia disperse by wind and germinate under favourable condition by formation of germ tube.

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