

Basidiocarp of Agaricus

By:

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Structure of Basidiocarp :

A. External Structure:

The mature basidiocarp is an open umbrella shaped structure with a broad expanded pileus on a long massive stalk-like stipe. The pileus is 5-12 cm (2-5 inch) in diameter with a convex upper surface, may be of white, yellow or light brown in colour.

The lower surface of the pileus bears about 300-600 radially arranged gills of 3 different lengths normal, half and quarter; the last one lying between half and normal length gills. The young gills are light pink in colour, but becomes purple or brown at maturity.

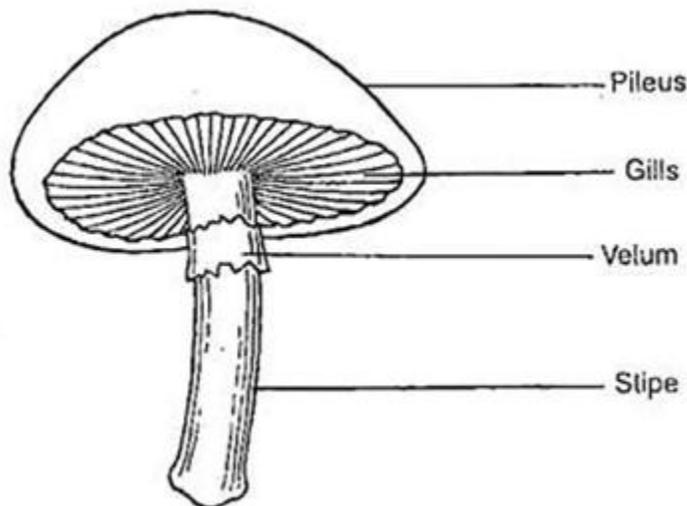


Fig. 1. Agaricus : Single Fruit body

The gills never touch the stipe. The stipe is elongated, thick, solid, soft and cylindrical structure and light-pink or white in colour. The fruit body remains attached with the substratum by rhizoidal mycelium.

B. Internal Structure:

(a) Stipe:

It is differentiated into central medulla, composed of loosely interwoven hyphae and an outer cortex, made up of densely compacted hyphae.

(b) Pileus:

Like stipe, it is also differentiated into outer compact and inner loose hyphae.

(c) Gills:

It is differentiated into three regions trama, sub-hymenium and hymenium:

(i) Trama:

It is the central sterile region of the gill, consists of many layers of loosely arranged interwoven hyphae.

(ii) Sub-Hymenium (Hypothecium):

It is also a sterile zone, situated on both sides of trama, formed by the lateral branches of hyphae develops from trama.

(iii) Hymenium:

This layer is present on the outer-side of sub-hymenium, composed of fertile basidium and club-shaped sterile paraphyses.

Development of Basidium in Agaricus:

Young basidium is aseptate, fertile dikaryotic cell present in the hymenial zone. As the basidium matures, the nuclei (+ and -) of dikaryon fuse together and form diploid nucleus (2n). This diploid stage is ephemeral. The diploid nucleus undergoes meiosis and forms four haploid nuclei (n), of which two are of "+" strain and the other two of "-" strain.

At the apex of the basidium, four peg-like or horn-shaped outgrowths are developed, known as sterigmata. The sterigma swells at the tip and after collecting one nucleus with cytoplasm, it develops into a single basidiospore. In between sterigma and basidiospore a small projection is present, called hilar appendage.

Basidiospore:

Basidiospores are oval, thin-walled and uninucleate .

Dispersal of Basidiospore:

The mature basidiospores are discharged from the basidium by water-drop mechanism. A drop of liquid appears at the hilar appendage. The drop gradually increases in size and creates a pressure which helps the spore to detach from sterigma .The spores of a basidium disperse in rapid succession.

Germination of Basidiospore:

Falling on suitable substratum, the basidiospore germinates by initiating germ tube which develops into primary mycelium, either + or – strain depends on the strain of spore (+ or -)

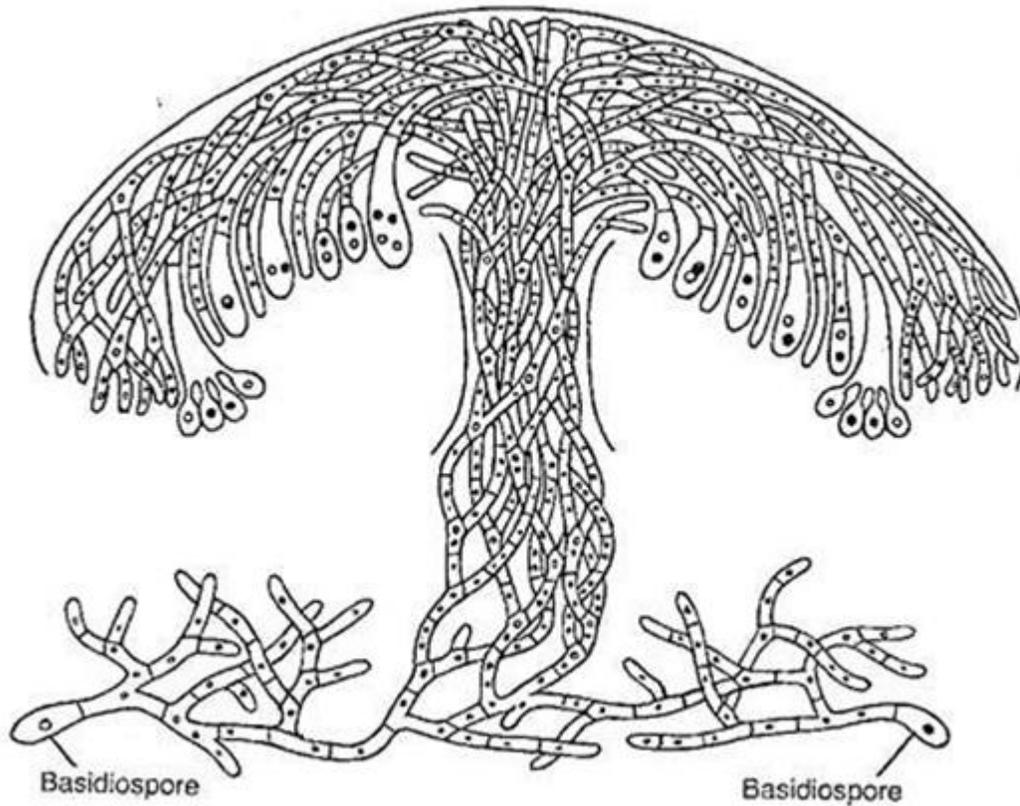


Fig. II. Agaricus:Diagram of Basidiocarp development by dikaryotic mycelium

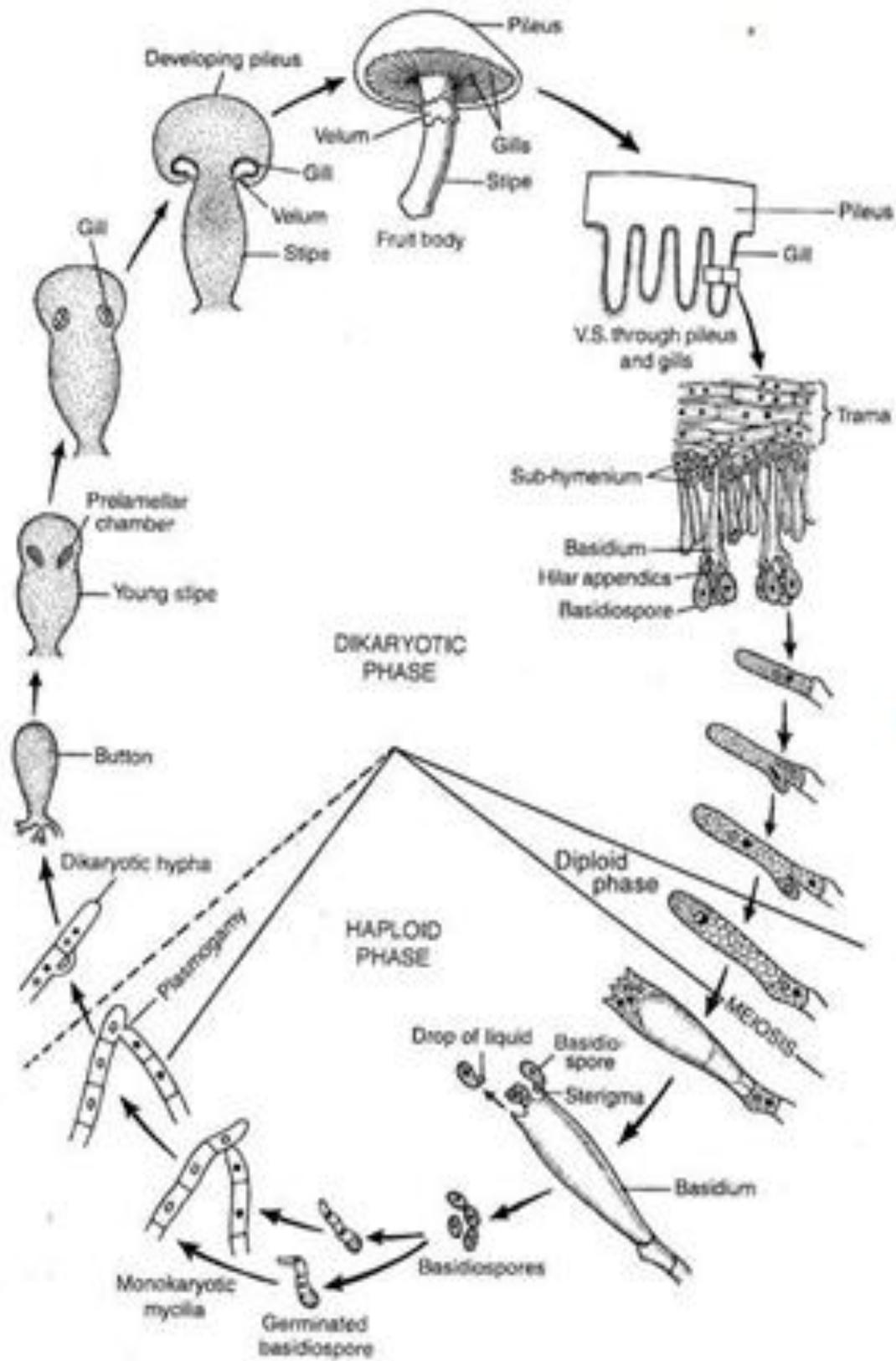


Fig III: Life Cycle of Agaricus