

Class 4: Eurotiomycetes

Order: Eurotiales

This order consists of fungus characterized by the formation of closed fruit bodies Cleistothecium composed of pseudo-histological tissue fungal and asexual reproduction by the formation of conidates, containing seven families, including the most important **Trichocomaceae**, which includes several species, most notably *Aspergillus* sp, *Penicillium* sp .

Ex 1: *Penicillium* sp.

The researcher (link) is the first who diagnosis *Penicillium* in 1809, *Penicillium* includes a list of 227 species worldwide, isolated from environments such as air, soil, food waste, fruits, vegetables, fodder, and enclosed environments. and have ability to attack food products, fruits and fodder because of their ability to grow in severe conditions, including growth in oxygen Low levels and high levels carbon dioxide, even at low temperatures.

Penicillium digitatum (Green Mold) is an important and common species that causes green fruit rot, The most common post-harvest diseases, causes major Economic losses, usually affecting most types of fruits, especially citrus.



Figure (1) *Penicillium digitatu* in (A) PDA (B) citrus fruits

Penicillium expansum (Blue Mold) is one of the most important causes of blue rot of post-harvest fruits and causes major economic losses annually. This type is known to cause the production of carcinogenic Mycotoxins. Patulin has been found in many samples of apple fruit Infected with this species.

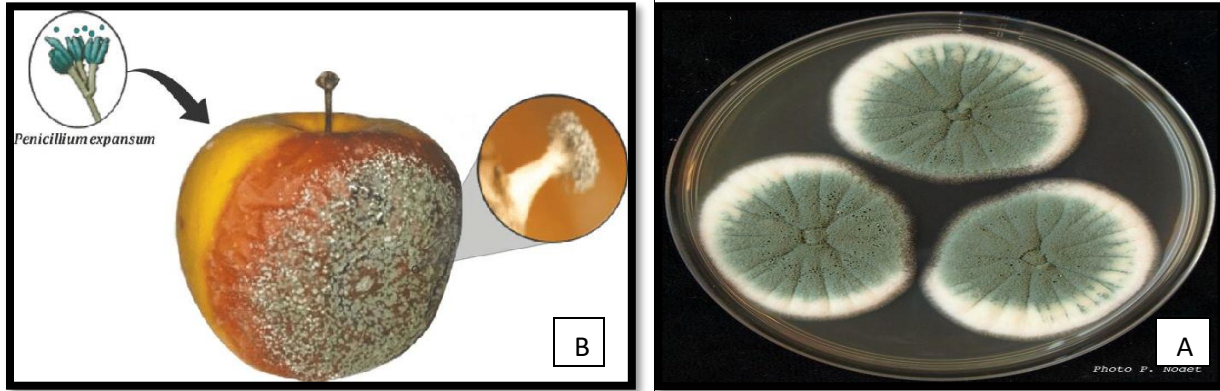


Figure (2) *Penicillium expansum* in (A) PDA (B) apple fruit

Penicillium chrysogenum is a widely studied species of *Penicillium* and is sometimes known as *P. notatum*, It play a significant role in the medical community as an antibiotic because it can Synthesis penicillin which inhibits the biosynthesis of bacterial cell walls affecting lysis of the cell .

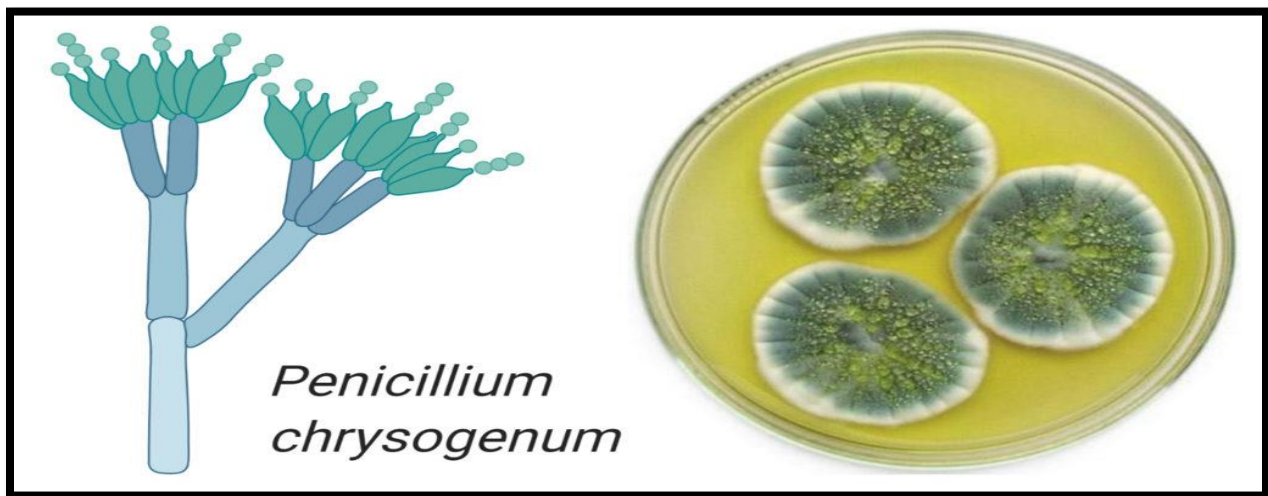


Figure (3) *Penicillium chrysogenum*

Ex 2: *Aspergillus* sp.

Aspergillus is an opportunistic pathogenic fungus that cause of the aspergillosis disease, this genus has about 200 species that grow in different environments. This fungus is common and all species of *Aspergillus* generally produce spores Conidia, which is best germinated at a temperature close to 35 °C, has some species of *Aspergillus* that High ability to resist Inappropriate environmental conditions through the production of sexual phases or stone objects.

Aspergillus niger is one of the most important fungal species which is characterized by spores of black color and is called black mold (Black Mold).

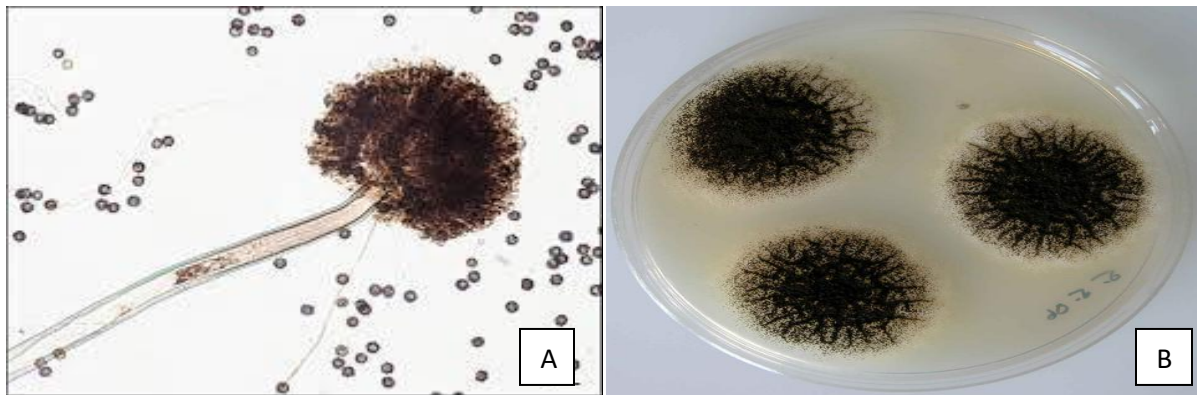


Figure (4) *Aspergillus niger* (A) under microscope (B) on PDA

Aspergillus flavus is a widespread fungal species in tropical and subtropical regions that causes damage to poorly stored crops. *A. flavus* produces aflatoxins, the most Mycotoxins dangerous, either lethal or carcinogenic to the liver.

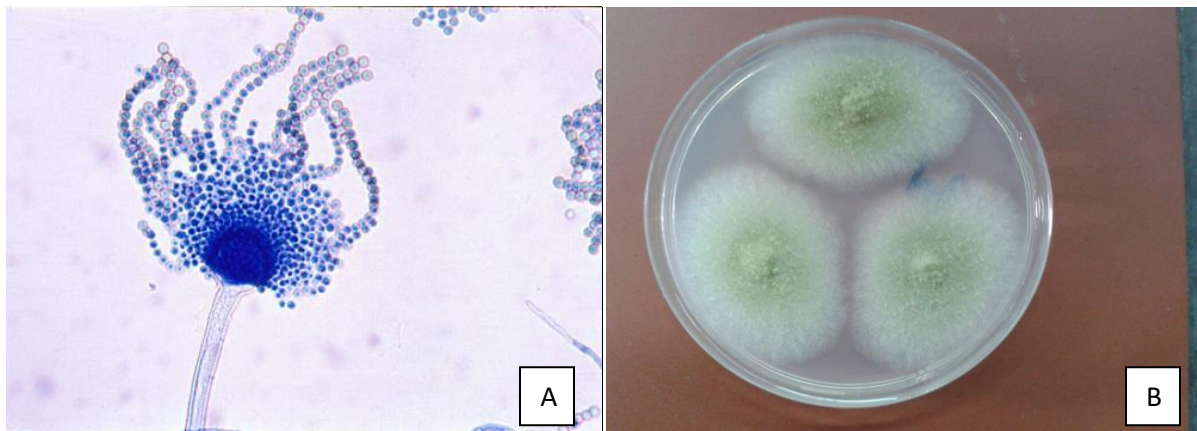


Figure (5) *Aspergillus flavus* (A) under microscope (B) on PDA

Class 5: Sordariomycetes

General characteristics:

- ❖ Consisting of 28 orders, 90 families, 1344 genus
- ❖ Generally produce their asci in perithecial fruiting bodies.
- ❖ Sordariomycetes are also known as Pyrenomycetes, called 'the stone of a fruit' - because of the texture of their tissue.

- ❖ Sordariomycetes possess great variability in morphology, growth form, and habitat. Most have perithecial (flask-shaped) fruiting bodies,
- ❖ Fruiting body generally Perithecium or Cleistothecium and sometimes inside Ascostroma .
- ❖ Members of this group can grow in soil, dung, leaf litter, and decaying wood as decomposers, as well as being fungal parasites, and insect, human, and plant pathogens

Order: Sordariales:

Family: Sordariaceae : These fungi are important to humans, where most of them are used as a model in biological laboratories such as *Neurospora sp.* , *Podospora sp.* and *Sordaria sp.*

Family: Chaetomiaceae

General characteristics

- 1- Ascospores are usually lemon-shaped, commonly colored olive-brown.
- 2- fruiting body ostiolar Perithecium Mycelia often grows in mass that like ropes
- 3- The most members of this family live on cellulose, so most of them live on the leaves and cotton fiber ,
- 4- saprophytism nutrition . for example *Chaetomium sp.* cause **Cloth mildew** .

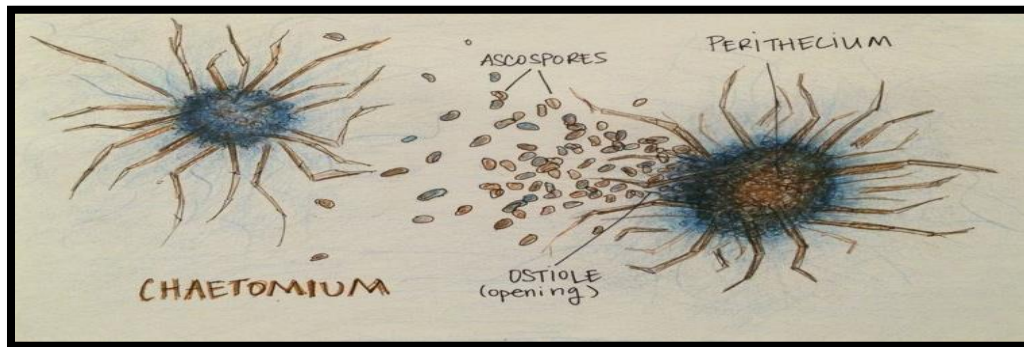


Figure (6) *Chaetomium sp.*

Order: Hypocreales

Family: Clavicipitaceae

EX: *Claviceps purpurea*

parasitic on grains, especially wheat, barley and oats, causes a disease known as Ergotism, Consumption of grains or seeds contaminated with the sclerotium, can

cause ergotism in humans, which produces some toxic alkaloids that cause health problems for humans and animals when consumed. Some of these alkaloids are useful and are used to make medicines to prevent bleeding that accompanies birth. The most important alkaloids are Ergot novin, Ergot metrin, Ergot amine, which is used as a medical drug to treat severe migraines.



Figure (8) *Claviceps purpurea* ergot sclerotium

Class 6: Leotiomycetes

Order: Erysiphales

Family: Erysiphaceae

Is divided into species according to appendage type and the number of ascus on the surface of the fruiting body, members causes **Powdery mildew** diseases included :

- 1- More than one ascus and appendage like the mycelium. **Ex:** *Erysiphae* sp.
- 2- One ascus and appendage like the mycelium. **Ex:** *Sphaerotheca* sp.
- 3- More than one ascus and appendage branch **Ex:** *Microsphaera* sp.
- 4- One ascus and appendage branch **Ex:** *Podosphaera* sp.
- 5- Appendage that globular base **Ex:** *Phyllactinia* sp.
- 6- Appendage shape is Hockey **Ex:** *Uncinula* sp.

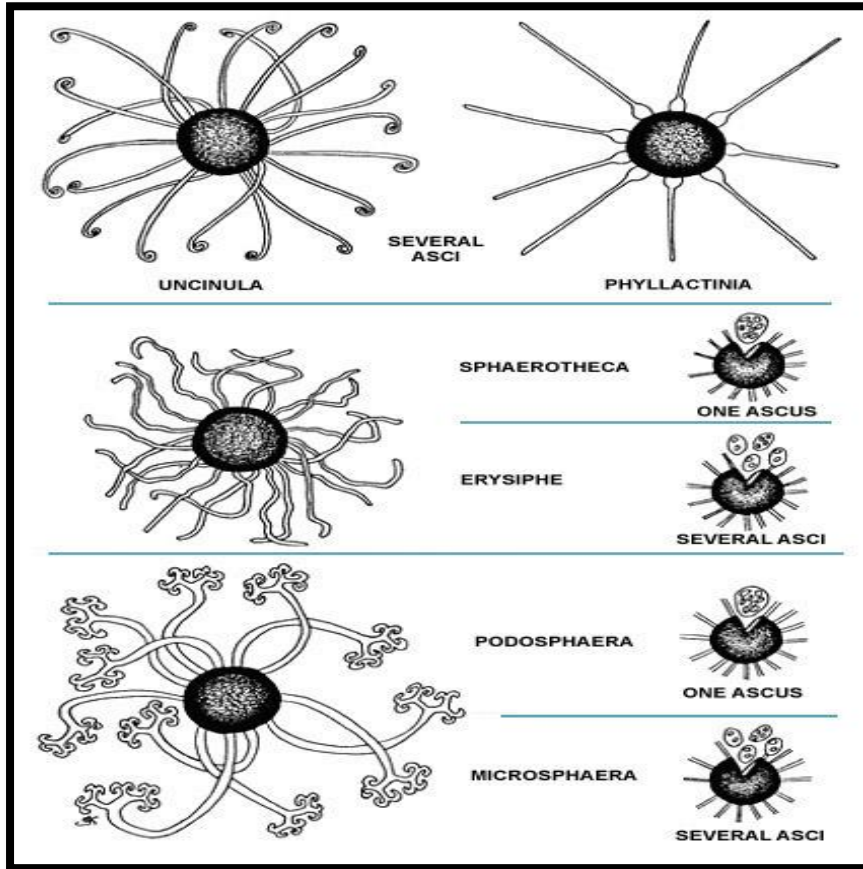


Figure (9) asci and appendage Erysiaceae species