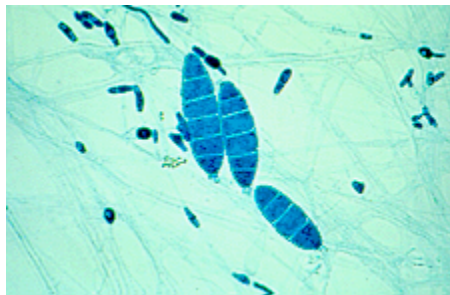


Mold of the Month February 2010

Microsporum sp.



Culture of *Microsporum gypseum*.



Macroconidia of *M. gypseum*

Colony Description

Microsporum colonies are glabrous, downy, woolly or powdery. The growth on Sabouraud dextrose agar at 25°C may be slow or rapid and the diameter of the colony varies between 1 to 9 cm after 7 days of incubation. The color of the colony varies depending on the species. It may be white to beige or yellow to cinnamon. From the reverse, it may be yellow to red-brown. As are discussed on separate pages for each species, varieties in macroscopic morphology and color help in inter-species differentiation.

Hair perforation test, ability to grow on rice grains and also at 37°C provide useful hints to differentiate *Microsporum* spp. from each other.

Microscopic Morphology

Microsporum spp. produce septate hyphae, microaleurioconidia, and macroaleurioconidia. Conidiophores are hyphae-like. Microaleurioconidia are unicellular, solitary, oval to clavate in shape, smooth, hyaline and thin-walled. Macroaleurioconidia are hyaline, echinulate to roughened, thin- to thick-walled, typically fusiform (spindle in shape) and multicellular (2-15 cells). They often have an annular frill. Inoculation on specific media, such as potato dextrose agar or Sabouraud dextrose agar supplemented with 3 to 5% sodium chloride may be required to stimulate macroconidia production of some strains. As are discussed

on separate pages for each species, varieties in shape of macroconidia and abundance of microconidia help in inter-species differentiation.

Ecology

Microsporum is a filamentous keratinophilic fungus included in the group of dermatophytes. While the natural habitat of some of the *Microsporum* spp. is soil (the geophilic species), others primarily affect various animals (the zoophilic species) or human (the anthropophilic species). Some species are isolated from both soil and animals (geophilic and zoophilic). Most of the *Microsporum* spp. are widely distributed in the world while some have restricted geographic distribution. *Microsporum* is the asexual state of the fungus and the teleomorph phase is referred to as genus *Arthroderma*.

Health Effect

Microsporum is one of the three genera that cause dermatophytosis. Dermatophytosis is a general term used to define the infection in hair, skin or nails due to any dermatophyte species. Similar to other dermatophytes, *Microsporum* has the ability to degrade keratin and thus can reside on skin and its appendages and remains noninvasive. As well as the keratinase enzyme, proteinases and elastases of the fungus may act as virulence factors. Notably, *Microsporum* spp. mostly infect the hair and skin, except for *Microsporum persicolor* which does not infect hair. Nail infections are very rare. The pathogenesis of the infection depends on the natural reservoir of the species. Geophilic spp. are acquired via contact with soil. Zoophilic species are transmitted from the infected animal. Direct or indirect (via fomites) human-to-human transmission is of concern for anthropophilic species. Asymptomatic carriage may be observed. As well as the otherwise healthy hosts, immunocompromised patients are also infected.