



Authoritative facts about the skin from the [New Zealand Dermatological Society Incorporated](#).

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Mycetoma

Mycetoma is a chronic infection of the skin, subcutaneous tissue and sometimes bone characterised by discharging sinuses filled with organisms. It is generally found on the foot where it is given the name "watering can foot".

Mycetoma may be due to several fungi (when it is called "eumycetoma") or actinomycetes ("actinomycetoma"). Actinomycetes are bacteria producing filaments like fungi. Both the fungi and the actinomycetes are found in soil and plant material in tropical regions.

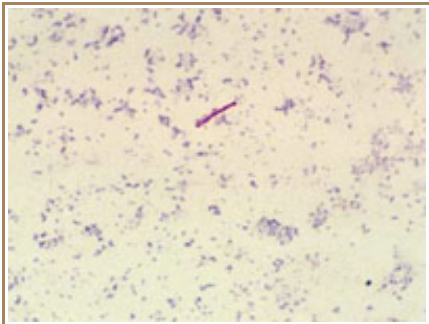
The organism is inoculated into the skin by a minor injury, for example, a cut with a thorn when barefoot. It is not endemic in New Zealand but mycetoma is occasionally diagnosed in native Pacific Islanders.



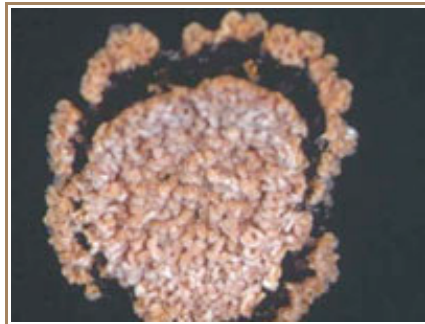
Long standing mycetoma resulting in deformity of the foot



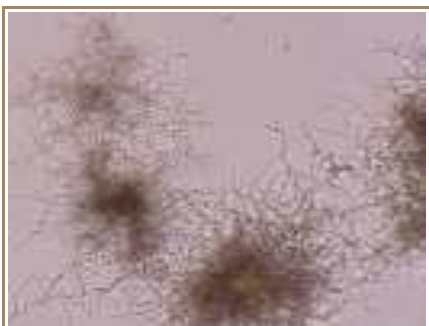
Sinuses from Nocardia infection resulting in watering can appearance



KOH preparation of Nocardia culture



Nocardia in a culture plate



Nocardia in agar

The most common fungi to cause mycetoma with black grains are:

- *Leptosphaeria senegalensis* (Africa)
- *Madurella grisea* (Africa, South & Central America)
- *Madurella mycetomatis* (Worldwide)
- *Pyrenochaeta romeroi* (Africa, South America)

The most common fungi to cause mycetoma with white grains are:

- *Acremonium* species (Africa, Middle East)
- *Apserpogon nidulans*. (Africa, Middle East)
- *Noetostudina rosatii* (Africa)
- *Pseudallescheria boydii* (Worldwide)

The most common actinomycetes to cause mycetoma with white/yellow grains are:

- *Actinomyces madurae* (Worldwide)
- *Nocardia asteroides* (Worldwide)
- *Nocardia brasiliensis* (Central America)

Brown or red grains occur in mycetoma due to:

- *Actinomyces pelletieri* (Africa)
- *Streptomyces somaliensis* (North Africa, Middle East).

Clinical features

Mycetoma is more common in men than women, particularly those aged 20 to 50. It generally presents as a single lesion on an exposed site and may persist for years. Two thirds arise on the foot.

- It starts as a small hard painless lump under the skin.
- It grows slowly but eventually involves underlying muscles and bones.
- The middle of the lesion caves in, ulcerates and discharges pus, which contains grains.
- Eventually, sinus tracts (holes) develop which also discharge pus and grains.
- The surface skin is scarred and pale.
- Considerable deformity often makes it difficult to walk.
- Mycetoma may cause no discomfort but it often itches or burns.
- Secondary bacterial infection is common.

The infection is occasionally confused with other skin conditions such as:

- Other fungal infections such as [chromoblastomycosis](#)
- Bacterial infections such as osteomyelitis, atypical mycobacterium infection, [tuberculosis](#), leprosy and [syphilis](#)

Diagnosis

The diagnosis of mycetoma depends on identifying grains. These are obtained using a needle and syringe to extract material from a soft part of the lesion under the skin or by collecting pus. Occasionally a skin biopsy is necessary.

Laboratory tests

The colour of the grains may suggest the likely diagnosis; black grains suggest a fungal infection, minute white

grains suggest nocardia and red grains are due to *Actinomadura pelletieri*. Larger white grains or yellow–white grains may be fungal or actinomycotic in origin.

Microscopy using potassium hydroxide (KOH) confirms the diagnosis and type of mycetoma.

- Actinomycotic grains contain very fine filaments.
- Fungal grains contain short hyphae (branched filaments) that are often swollen

Several agar plates are cultured at 25–30 degrees celcius and 37 degrees celcius for up to six weeks. Fungi grow more quickly than actinomycetes.

Treatment

Mycetoma does not resolve without active treatment.

Actinomycetoma responds well to treatment with appropriate antibiotics but they are required for months or years. The sinuses dry up, swelling and tenderness improves and the grains disappear. Deformity may persist.

Single or combination treatment is used:

- Streptomycin injections
- Oral cotrimoxazole (Apo–Sulfatrim®, Bactrim®, Septrin®, Trimel®, Trisul®)
- Amikacin (Amikin®)
- [Dapsone](#)
- [Rifampicin](#) (Rifidin®)
- [Minocycline](#) (Minomycin®, Minotabs®).

Eumycetoma is more difficult to treat.

- [Itraconazole](#)
- [Ketoconazole](#)
- Surgery to remove the affected tissue completely. These may mean amputation if bone is involved.

Related information

On DermNet NZ:

- [Introduction to fungal infections](#)
- [Laboratory tests for fungal infections](#)

Other websites:

emedicine:

- [Eumycetoma \(Fungal Mycetoma\)](#)
- [Mycetoma](#)

Books about skin diseases:

See the [DermNet NZ bookstore](#)

DermNet does not provide an on–line consultation service.

If you have any concerns with your skin or its treatment, see a [dermatologist](#) for advice.

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