

Challenge 1601-2

January 2016

Skin: *Microsporium canis*

HISTORY

This challenge was sent as a simulated skin sample. Laboratories were expected to isolate and identify *Microsporium canis*.

CMPT QC/QA/Statistics

All Mycology samples are produced at CMPT according to CMPT internal protocols.

The samples are assessed for homogeneity and stability using in-house quality control methods and random selection of samples before and during production, and post sample delivery. The number of random samples selected is 15% of the total production batch.

The sample was verified by a reference laboratory. *Microsporium canis* was isolated as a pure culture on Phytone and PDA media after 72 hours incubation at 30°C.

The challenge sample lot was confirmed to be homogeneous and stable for at least 29 days.

All challenge components have in-house assigned values based on the most clinically appropriate result; the most clinically appropriate result is determined by expert committee evaluation. No further statistical analysis is performed on the results.

SURVEY RESULTS

Eight out of nine participants correctly reported the isolate to the genus level: *Microsporium*. Six of these laboratories correctly reported the organism as *M. canis* (Table 1).

Table 1. Results reported

Reported results	Labs
<i>Microsporium canis</i>	6
<i>Microsporium</i> species +/- refer	2
Dermatophyte isolated, refer	1
Total	9

One laboratory reported the isolate as dermatophyte and indicated they would refer for further identification.

Mycology challenges are not graded.

IDENTIFICATION

Colony morphology

On Sabouraud's dextrose agar, *Microsporium canis* matures within 6 to 10 days producing colonies that are flat, spreading, white to cream-coloured, with a dense cottony, granular to coarsely fluffy to hairy surface which may show some radial grooves (Figures 1a and b).

Colonies usually have a bright golden yellow to brownish yellow pigment on reverse culture, but non-pigmented strains may also occur. There are variants that are slow growing, heaped and folded, yellow surface, no pigment on reverse culture, absent macroconidia, but reverts to typical colony on rice grains.³⁻⁵

Microscopic morphology

Microsporium canis produces septate hyphae, macroconidia and few or rare microconidia.

Macroconidia are typically long spindle-shaped, with 5-15 cells, rough, thick-walled, and often have a terminal knob. The septate walls are thin (Figure 2).

Microconidia are rare, unicellular, and clavate to pyriform in shape. Raquet hyphae, nodular bodies and chlamyospores may be present.^{4, 5}

CLINICAL RELEVANCE

Dermatophytes are keratinophilic fungi that are capable of invading the keratinous tissues and thus they generally manifest as infections of hair, nails, skin of humans and other mammals.

Microsporium canis is a zoophilic dermatophyte which causes ringworm of the scalp and skin in children and has been occasionally reported as the cause of nail infections.

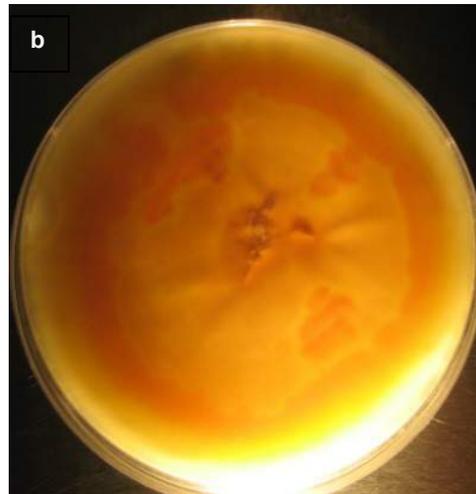
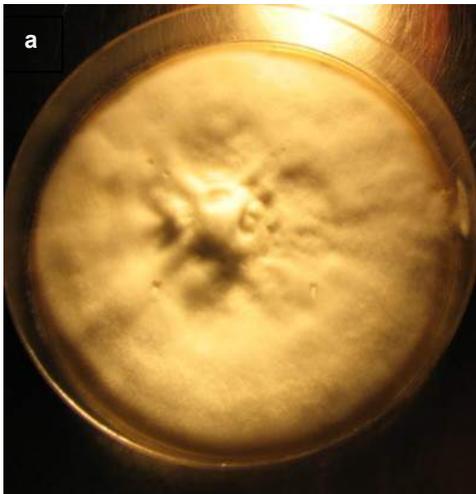


Figure 1. Colony of *Microsporium canis* on Sabouraud's dextrose agar (a: front; b: reverse)

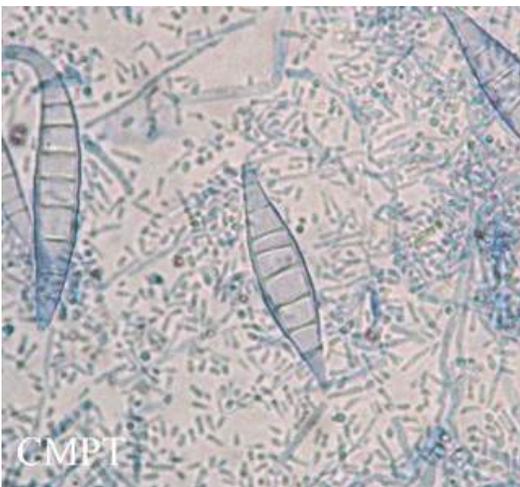


Figure 2. Macro and microconidia of *M. canis* under magnification of 400X. Lactophenol cotton blue.

Transmission is usually carried out by arthroconidia that have formed in or on infected host tissue.³

Tissue invasion is normally cutaneous and dermatophytes are usually unable to penetrate deeper tissues.

Infections originating on the glabrous skin are called tinea corporis. Lesions are annular, sharply marginated, have a raised border, and may be single, multiple, or confluent.

Lesions of the skin can show minimal erythema or be highly inflammatory composed of pustules, vesicles, and marked erythema.²

Microsporium species, especially *M. canis*, are one of the most commonly reported causative agents of dermatomycoses worldwide, especially in Europe, including the Mediterranean and Central Europe, major parts of Asia, Africa, and South America.

Cats and dogs are the main reservoir of *M. canis* as well as some other mammalian species, including rabbits.⁶

REFERENCES

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