

Nyt om hudsvampediagnostik

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Lise Kristensen, overlæge
Klinisk Mikrobiologisk Afdeling AUH

Dermatofytdiagnostik – nye tiltag:

- Udvidet artsdiagnostik ved PCR
- Resistensbestemmelse

Årligt modtages:

- - ca. 14.000 prøver årligt til PCR for dermatofyter
- - ca. 300 prøver til mikroskopi og dyrkning (obs. *Malassezia*)
- Højsæson maj-september
- Lavsæson oktober-april



- Mikroskopi og dyrkning frem til 2013

➔ Overgang til PCR

- Fordele ved PCR:

- **Øget positiv rate:**

- PCR: 36-40%
- Dyrkning: ca. 27%

- **Hurtigere prøvesvar:**

- PCR: 2-5 hverdage
- Dyrkning: 2-3 uger

- **Mindre arbejdskrævende i laboratoriet**



- **Screenings PCR** (pan-dermatofyt PCR, *Trichophyton rubrum*, *Trichophyton interdigitale*)
 - > 95% *T. rubrum* og *T. interdigitale*
- **Supplerende PCR** for prøver uden artsidentifikation (< 5%)



Supplerende PCR - DermaGenius

■ Primært hår/hårbund og hudafskrab

- *Candida albicans* (*C. albicans*)
- *Trichophyton interdigitale* (*T. interdigitale*)
- *Trichophyton tonsurans* (*T. tonsurans*)
- *Trichophyton mentagrophytes* (*T. mentagrophytes*) ←
- *Trichophyton rubrum* (*T. rubrum*)
- *Trichophyton soudanense* (*T. soudanense*) ←
- *Trichophyton violaceum* (*T. violaceum*)
- *Trichophyton benhamiae* (*T. benhamiae*) ←
- *Trichophyton verrucosum* (*T. verrucosum*) ←
- *Microsporum canis* (*M. canis*) ←
- *Microsporum audouinii* (*M. audouinii*) ←
- *Epidermophyton floccosum* (*E. floccosum*). ←



- ID vigtig af hensyn til smitteopsporing (zoofile versus antropofile dermatofyter)
- ID vigtig for behandling (tinea capitis)

Ugeskr Læger
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VIDENSKAB

Tinea capitis er en overset sygdom hos børn

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STATUSARTIKEL

Tinea capitis (TC) er en svampeinfektion, der forekommer i hår og hårbund, primært hos børn [1]. Sygdomsmelsvampe med præference for keratiniseret væv [2]. Der findes ni dermatofytgenera [10, 11] (Tabel 1).

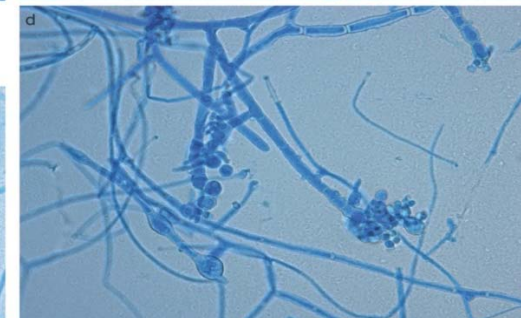
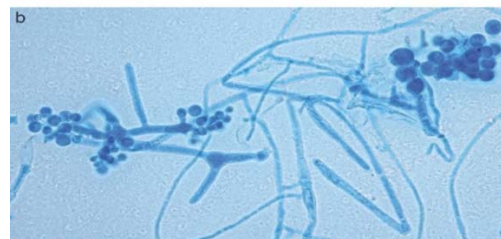
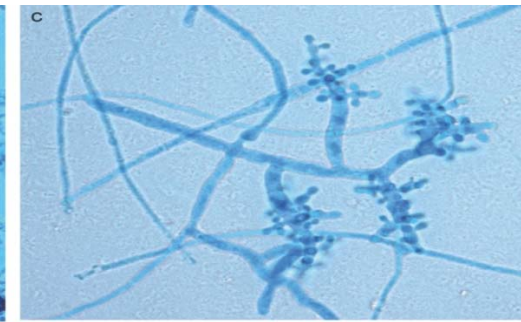
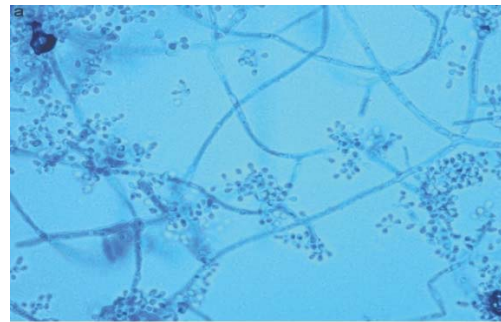
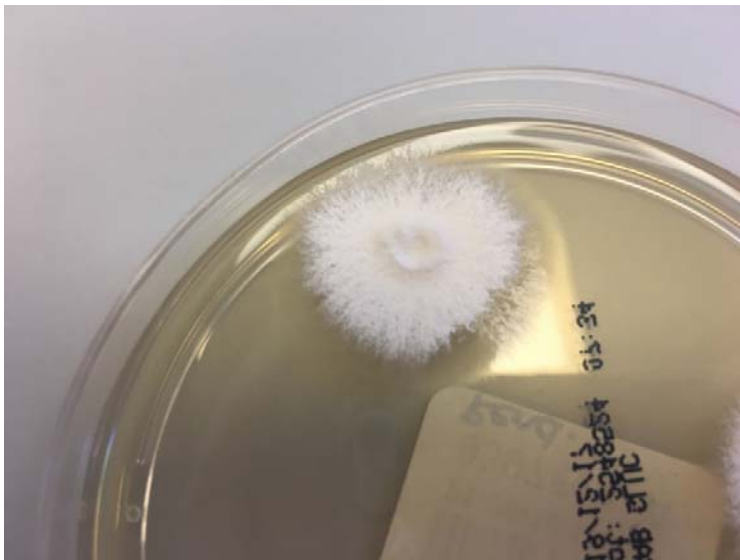
HOVEDBUDSKABER

- ▶ Tinea capitis er en svampeinfektion i hår og hårbund; den kan ligne eksem og pletsældethed.
- ▶ Tidlig opsporing, diagnostik og behandling af patienter og tætte kontakter er vigtig for at hindre smittespredning.
- ▶ Ændringen i infektiøse agens over tid har medført, at smitte mellem mennesker er hyppigere end tidligere.

Podning fra abdomen (navle) fra 25-årig kvinde

- ◆ Vækst på alle plader af små kolonier med mycelie
- ◆ Mikroskopi: dermatofyt lignende svamp!
- ◆ Omsåning på Sabouraud glucose

- ◆ PCR: positiv i pan-dermatofyt
- ◆ Supplerende PCR: *Trichophyton benhamiae*



- Zoofil dermatofyt
- Vært: små gnavere, ofte marsvin
- Klinik: tinea capitis, tinea corporis
- Behandles med terbinafin



Trichophyton benhamiae

- Hyppig hos hamstere og især marsvin
- Nylig dansk undersøgelse:

17 dyrehandlere på Sjælland:
Trichophyton benhamiae kunne isoleres fra 38% af marsvin, 6% hamstere, 0 kaniner

- Oftest asymptomatiske dyr!

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ORIGINAL ARTICLE

WILEY 

Would you like to purchase a rodent with dermatophytes?

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Summary

The zoophilic dermatophyte *Trichophyton benhamiae* has received attention due to increasing infections in human in recent years. *Trichophyton benhamiae* has been found on asymptomatic rodents from pet shops in several countries posing a potential risk for transmission to humans. The aim of this study was to determine the prevalence of positive dermatophyte cultures from rodents in Danish pet shops in order to clarify the magnitude of potential sources of zoophilic infections and to prevent further spread. Specimen sampling was performed in 17 Danish pet shops using the brush technique (MacKenzie technique). After incubation, cultures were sent to ITS DNA sequencing for molecular species identification. Pet shop employees were asked to fulfil a five-question survey regarding purchase and procedures of diseased animals. A total of 98 animals were sampled (N = 32 rabbits, N = 32 guinea pigs and N = 34 hamsters). *Trichophyton benhamiae* was found in 14/98 samples (14%); 12/32 guinea pigs (38%) were positive with *T benhamiae*, 2/34 (6%) hamsters and 0/32 rabbits (0%). We found that hamsters and particularly guinea pigs from Danish pet shops are common asymptomatic carriers of the dermatophyte *T benhamiae*. Although a larger study is warranted to test this postulate, and it raises the question if infection control measures should be implemented in pet shops.

KEYWORDS

arthrodermataceae, guinea pigs, hamster, pet shop, rabbits, tinea, *Trichophyton benhamiae*, zoonoses

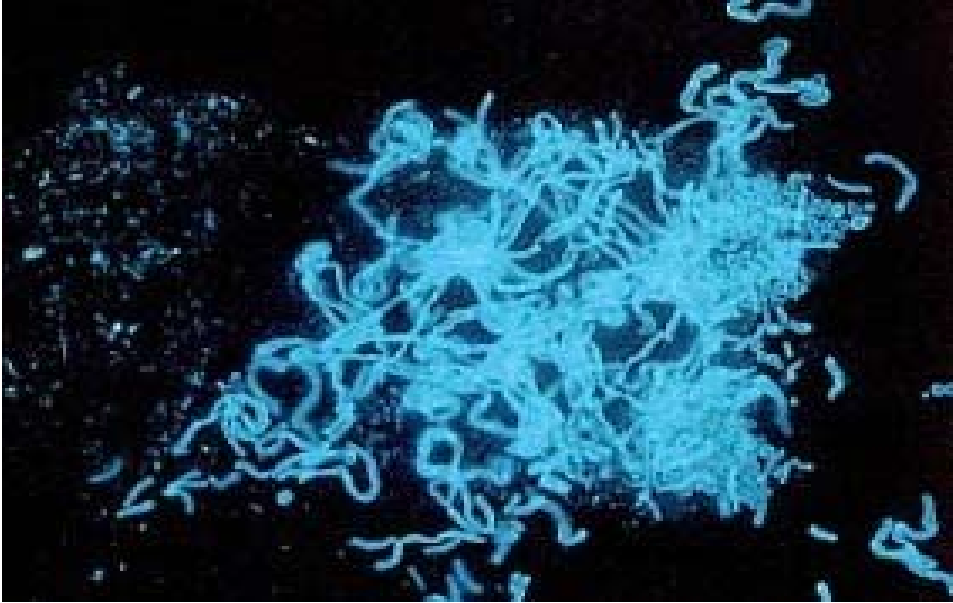
1 | INTRODUCTION

Dermatophytes are occasionally transferred from animals to humans causing dermatophytosis. Zoophilic dermatophytes are divided into subspecies depending primarily on their molecular characteristics.¹ *Trichophyton mentagrophytes* complex species, *Microsporum canis* and *Trichophyton verrucosum* are considered as the most common zoophilic dermatophyte infecting humans.²⁻⁵ *Trichophyton benhamiae*, a species recently described as an in-

creasing infections in humans.⁶⁻⁹ The inflammatory response varies on the type of zoophilic dermatophyte, and members of the *T mentagrophytes* complex such as *T benhamiae* found in rodents, are considered more inflammatory in humans, than other zoophilic dermatophyte species.¹⁰ Guinea pigs are believed to be the primary host of *T benhamiae*, but also rabbits and several other rodents have been described as carriers of *T benhamiae*.^{6,11,12} Clinical signs of infection varies from areas of alopecia, scaling, crusting or cradlecap lesions with raised erythematous borders on the head

- PCR førstevalg for identifikation af dermatofyter i hud, hår og negle
- Mikroskopi og dyrkning

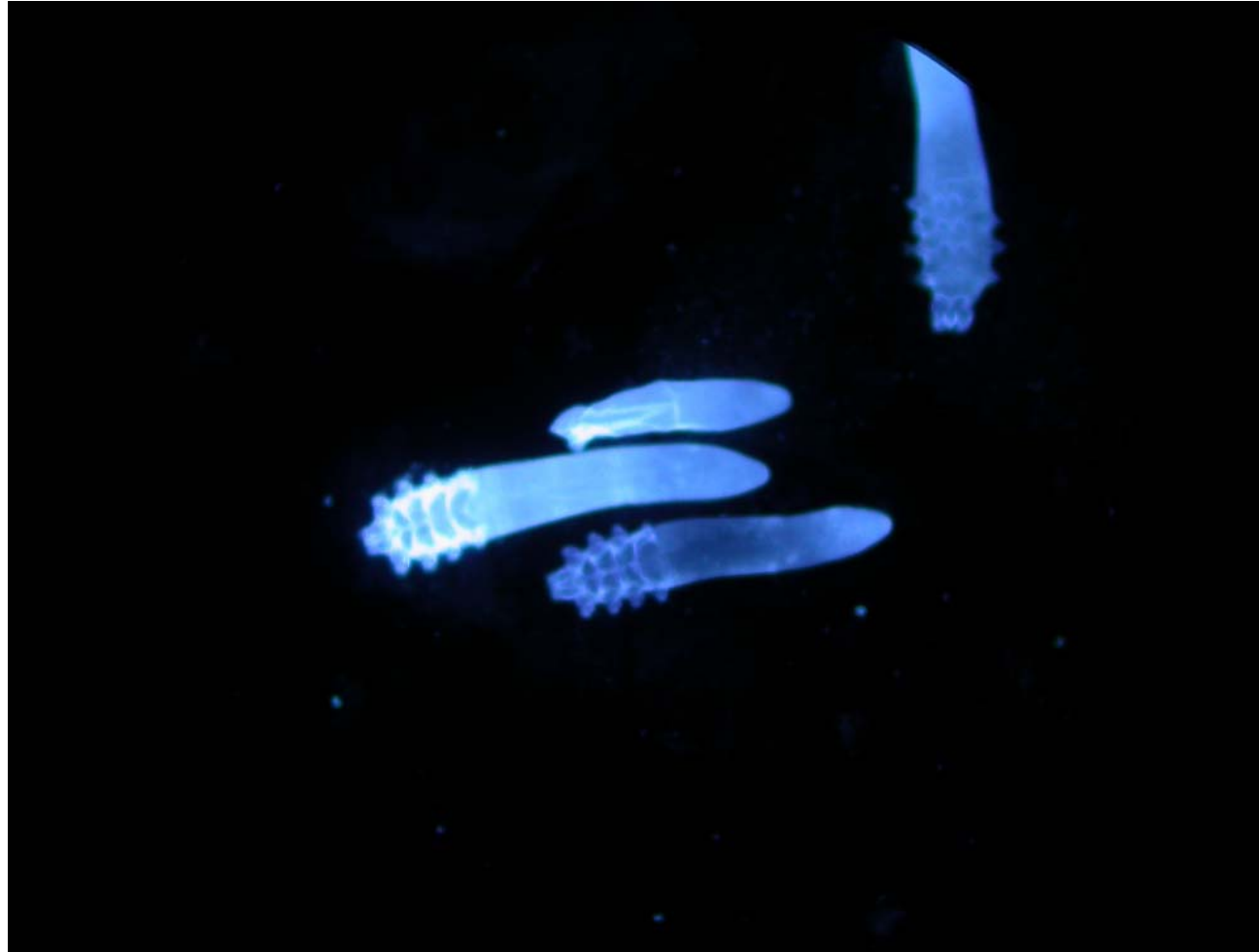
Malassezia

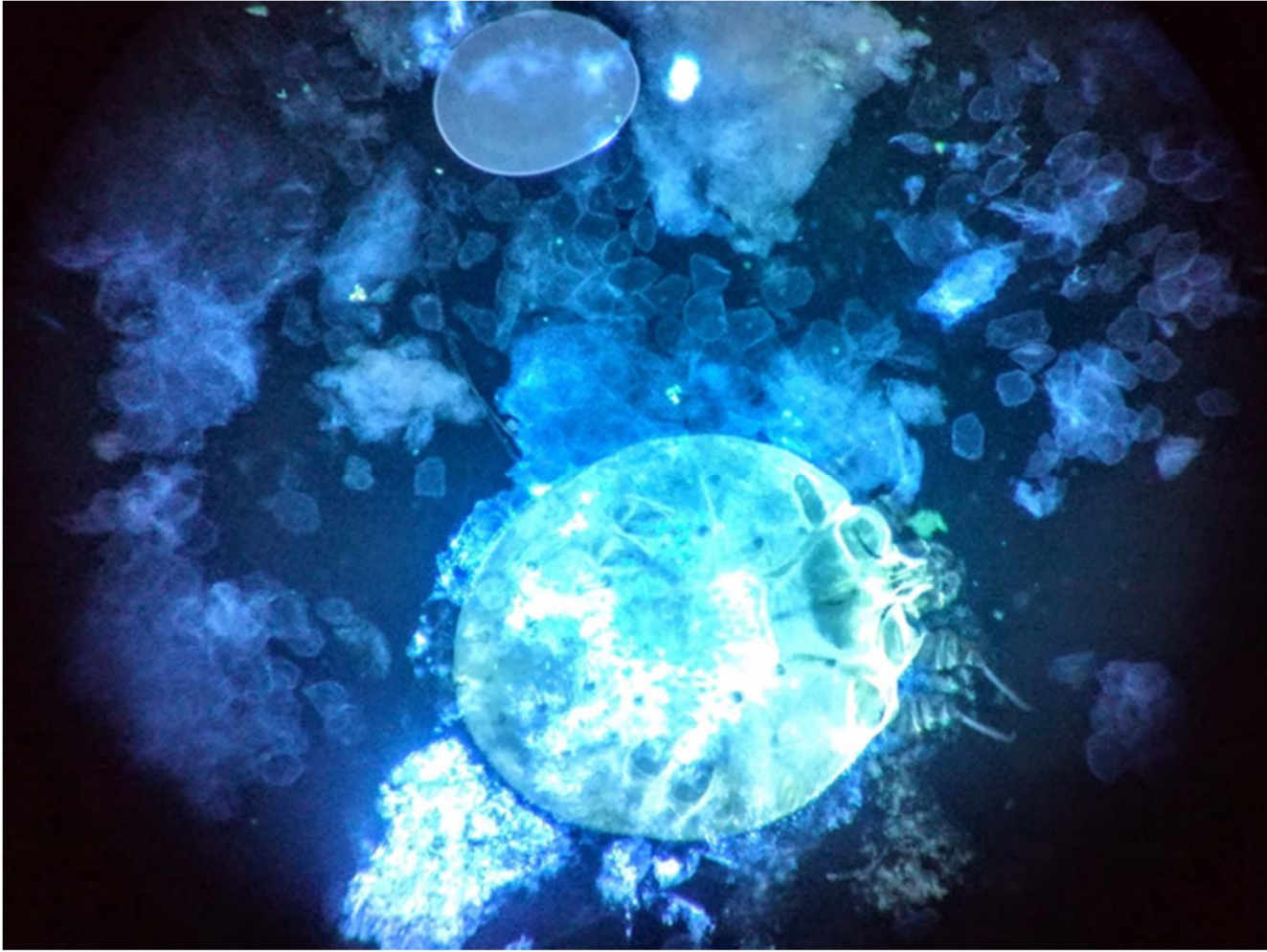


Blankophormikroskopi



Uventedede fund!





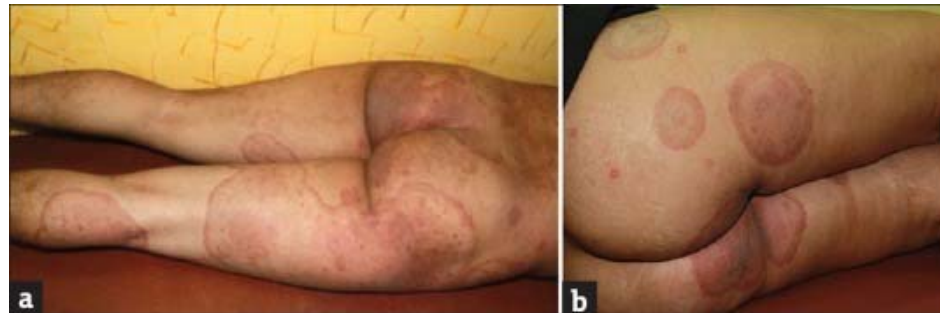
Indikation for mikroskopi og dyrkning

- *Malassezia*
- Mistanke om non-dermatofyt skimmelsvamp i negle
- Ny indikation: Resistensbestemmelse af dermatofyter

Øget forekomst af terbinafin resistens— særligt i Asien

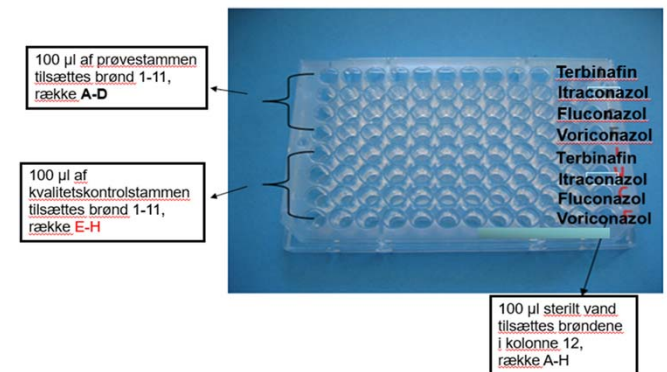
Indien:

- Stor resistensforekomst hos dermatofyter for terbinafin
- *Trichophyton* spp. (*T. interdigitale*/*T. mentagrophytes*/*T. rubrum*/*T. verrucosum*)
- Meget inflammatoriske læsioner
- Stort forbrug af kombinationsmidler (svampemiddel + steroid)



- Resistens for terbinafin hos dermatofyter ses nu også i DK herunder også importerede tilfælde fra Asien

- Standardiseret resistensbestemmelsesmetode
- Følger anbefalinger fra EUCAST



- Indikation: behandlingssvigt med terbinafin - indsendes i Dermapak til ”mikroskopi, dyrkning og resistensbestemmelse”

- Andre årsager til behandlingssvigt:

- for kort behandlingsvarighed
- manglende compliance
- dårlig penetration
- forkert diagnose

Foreløbige erfaringer

- 18 prøver (med vækst) siden december 2020, hvor indikationen er opfyldt
 - Tånegl/fod: 15, femur/genitalia: 3
 - 11 sendt fra hudlæge/hudafdeling, 7 fra praktiserende læger
 - Lang svartid! – omkring 4-5 uger fra prøven er modtaget
-
- 8 resistente for terbinafin (44%)
 - Alle følsomme for itraconazol

Mange bivirkninger ved terbinafinbehandling, bla.:

- Hudmanifestationer
- Levertoksicitet

358 *Letters to the Editor*

Serious Adverse Events Reporting on Systemic Terbinafine: A Danish Register-based Study

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Opsummering

- **PCR førstevalg**
- Indsende i PCR rør
- **Udvidet artsdiagnostik** – betydning for smitteopsporing og behandling

- **Mikroskopi og dyrkning**

- **Resistensbestemmelse af dermatofyter** – indikation er behandlingssvigt med terbinafin

- Rigeligt prøvemateriale vigtigt!
- Indsende i Dermapak



➔ Prøvetagningsvejledning i eDok – skema over prøvetagning til
superficielle svampeinfektioner

