Culture and identification of dermatophytes and non-dermatophytes from skin, nail and hair

Culture and microscopy

General information

Request: Superficial mycology testing, dermatophyte testing

Turnaround time:
Direct microscopy: 1-4 days
Culture and identification: 1-4 weeks. Longer for some unusual and/or slow-growing fungi.

Sample type/container:
Dermapaks, or similar envelopes, should be used.

Skin: scrapings (for subcutaneous lesions collect subcutaneous tissue and request fungal culture)
Hair: plucked hair roots and hair shaft, NOT cut hair
Nail: nail clippings, scrapings of sub-ungual debris

Adequate scrapings and clippings are required for direct microscopy and culture

Laboratory Information

Biological interval/clinical decision values:

Microscopy results:
Positive microscopy is reported as **Fungal elements SEEN**
Negative microscopy is reported as **Fungal elements NOT seen**

The British Association of Dermatologists clinical guidelines on fungal nail infections confirms positive microscopy is diagnostic for fungal infection.

Culture results:
Negative culture is reported as **Fungal culture negative after 3 weeks**

No significant fungi isolated is reported when fungal organism(s) grown are not likely to cause infection.

Positive culture is reported as number of colonies grown out of number of inoculants (up to 40).
A recognised cause of superficial infection is reported when a dermatophyte or other significant, non-dermatophyte fungal species is grown.

Clinical Information

Ideally collect samples prior to initiating antifungal therapy. Repeat testing should only be considered after completion of therapy (see guidelines for recommended duration) and in the absence of clinical response.

Direct microscopy will be prioritised where there is insufficient material for full analysis.

There has been a marked rise in infections in the UK since 2017 due to *Trichophyton indotineae*, an antifungal-resistant dermatophyte. Separately, but concurrently, *Trichophyton mentagrophytes* genotype VII (TMVII) strain has emerged as an increasingly recognised sexually transmissible dermatophyte. Due to genetic similarity within this genus, molecular techniques are required to distinguish between the different species. As such techniques are not part of routine laboratory diagnostics, it is essential that the request includes relevant travel, contact and sexual, as well as antifungal history. Dermatophyte antifungal susceptibility testing is not routinely done and will only be done when requested and required.

Timely communication with the Mycology Reference Centre laboratory is essential for appropriate sample collection and diagnostics, and to avoid delays that allow further spread of infection.

References:

Ameen M, Lear JT, Madan V, Mohd Mustapa MF, Richardson M. British Association of Dermatologists' guidelines for the management of onychomycosis 2014. Br J Dermatol. 2014 Nov;171(5):937-58. doi: 10.1111/bjd.13358.

Chowdhary A, Singh A, Kaur A, Khurana A. The emergence and worldwide spread of the species *Trichophyton indotineae* causing difficult-to-treat dermatophytosis: A new challenge in the management of dermatophytosis. PLoS Pathog. 2022 Sep 29;18(9):e1010795. doi: 10.1371/journal.ppat.1010795.

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