4Cyte Pathology

Tel: 13 4CYTE
13 42 98
www.4Cyte.com.au

Fungal PCR + MC for nail clippings

4Cyte Pathology is the first (and only) laboratory in Australia to provide NATA accredited Fungal PCR in combination with microscopy and culture (MC) for nail clippings.

4Cyte Pathology's Fungal PCR + MC test provides doctors and their patients with:

Significant improvement in time to an actionable diagnosis:

- 4Cyte's Fungal PCR result available in 24 - 48 hours (vs 4 - 6 weeks for culture).

Significant improvement in accuracy, sensitivity, and specificity:

- 4Cyte's Fungal PCR + MC is 45% more sensitive than MC alone.
- 4Cyte Fungal PCR has 100% specificity (no false-positive results were detected in studies conducted).
- 4Cyte Fungal PCR + MC ensures improved diagnostic accuracy (confirmed by sequencing of PCR products and fungal isolates).
- 4Cyte Fungal PCR + MC performed with 100% reproducibility in studies conducted.

Test Requesting Details:

What to Request:	"Fungal PCR + MC"
Request Form:	Any Pathology Request form acceptable (4Cyte form preferred)
Sample Type:	A full width nail clipping with a minimum height of 2mm (in a yellow top container)
Billing:	Bulk Billed for All Medicare card holders
Specimen Collection:	If Nurse / Doctor collected: Specimens collected by nurse / doctor can be picked up by 4Cyte courier. To arrange pick up by 4Cyte courier: QLD – call 07 2139 8503 or couriers.qld@4Cyte.com.au NSW – call 02 4003 5011 or couriers.nsw@4Cyte.com.au VIC – call 03 8594 1489 or couriers.vic@4Cyte.com.au **Or:** Direct patient to 4Cyte Collection Centre for specimen collection

To contact 4Cyte Doctor liaison / representative please email support@4cyte.com.au or telephone 13 42 98.

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Onychomycosis is the most frequent nail disease and accounts for ~50% of all nail abnormalities.

Its prevalence in highly developed countries is 5-10%, and increases with patient age. The most common fungi causing onychomycosis are dermatophytes (80-85%), followed by yeasts (5-10%), and the most common dermatophytes are *T. rubrum* complex (50-60%) and *T. mentagrophytes* complex (20-30%).

The coexistence of toenail onychomycosis with fungal skin infections is a frequent phenomenon and it has been postulated that infected toenails may be a site from which fungal infection can spread to other body areas. Onychomycosis of the toenails has also been found to be a significant risk factor for bacterial leg cellulitis. Therefore, rapid and reliable diagnosis and effective therapy of onychomycosis is important not only for clearance of nail infection but also to prevent spreading of fungi to other skin sites and reduce the risk of bacterial cellulitis.

Differential diagnosis of onychomycosis includes psoriasis, lichen planus, onychogryphosis and trauma, hence microbiological diagnosis is essential to confirm aetiology and ensure targeted therapy.

The conventional method for diagnosis of onychomycosis is potassium hydroxide (KOH) direct microscopy followed by culturing on special media. Microscopy is a fast screening method but can be false-negative in up to 15% of cases and cannot always reliably differentiate fungal hyphae from (yeast) pseudohyphae. Culture may take up to 6 weeks due to the slow growth rate of dermatophytes and is often even less sensitive than microscopy.

To ensure rapid and reliable diagnosis of onychomycosis, 4Cyte Pathology has introduced a PCR assay that detects 90% of fungi isolated from nail samples in our laboratory:

- *T. rubrum* complex
- *T. mentagrophytes* complex
- *Candida* spp.

This assay is more sensitive than culture and its specificity (100% specific) has been confirmed by sequencing.

However, since other fungi (both dermatophytes and non-dermatophytes) not detected by our PCR assay have also been associated with onychomycosis, it is essential to request both fungal PCR and microscopy+culture (MC) to ensure correct microbiological diagnosis.

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NATA
ACCREDITED FOR
TECHNICAL
COMPETENCE