DERMATOPHYTE TEST MEDIUM (DTM)

INTENDED USE
Remel Dermatophyte Test Medium (DTM) is a solid medium recommended for use in qualitative procedures for selective isolation of pathogenic fungi (dermatophytes) from cutaneous sources.

SUMMARY AND EXPLANATION
The dermatophytes are fungi that possess keratinolytic properties that enable them to invade skin, nails, and hair.[1] The infections caused by these organisms are commonly referred to as ringworm and are classified by the Latin word *tinea* followed by the area of the body infected.[2] Dermatophyte Test Medium (DTM) was formulated by Taplin et al. for use in locations where specialized training and microscopic examination is not available.[3] A pH indicator and three antimicrobial agents are incorporated into the agar to provide a differential and selective medium for isolation of dermatophytes belonging to the genera *Microsporum*, *Trichophyton*, or *Epidermophyton*.

PRINCIPLE
Soy peptone supplies the nitrogen and carbon compounds necessary for the growth of microorganisms. Dextrose is an energy source. Phenol red is a pH indicator which detects alkaline metabolites produced by dermatophytes, resulting in a red color development of the medium. Cycloheximide, chloramphenicol, and gentamicin are selective agents which inhibit most saprophytic fungi and many gram-positive and gram-negative bacteria, including some *Pseudomonas* spp.

REAGENTS (CLASSICAL FORMULA)*

Dextrose	10.0	g	Chloramphenicol	0.1	g
Soy Peptone	10.0	g	Gentamicin	0.1	g
Cycloheximide	0.5	g	Agar	20.0	g
Phenol Red	0.2	g	Demineralized Water	1000.0	ml

pH 5.5 ± 0.2 @ 25°C

*Adjusted as required to meet performance standards.

PROCEDURE
1. Collect specimen following established procedures. Consult appropriate references for further instructions.[1,2,4]
2. Allow DTM to equilibrate to room temperature prior to use. The agar surface should be dry before inoculation.
3. Place the specimen centrally on the surface of the medium and press into the agar to ensure firm contact.
4. Incubate in ambient air at 25-30°C for up to 14 days. Allow the cap on the tube to remain loose so that air may be exchanged during incubation.
5. Examine the medium at regular intervals for a red color development. On DTM, dermatophytes elaborate alkaline metabolites which elevate the pH of the medium and change the phenol red indicator from yellow to red.[5] **Note:** Microscopic examination (e.g., wet-mount, KOH) is required for presumptive identification of an isolate as a dermatophyte.

QUALITY CONTROL
All lot numbers of Dermatophyte Test Medium (DTM) have been tested using the following quality control organisms and have been found to be acceptable. Testing of control organisms should be performed in accordance with established laboratory quality control procedures. If aberrant quality control results are noted, patient results should not be reported.

CONTROL	INCUBATION	RESULTS
Candida albicans ATCC® 10231	Ambient, up to 72 h @ 25-30°C	Good growth
Trichophyton mentagrophytes ATCC® 9533	Ambient, up to 72 h @ 25-30°C	Good growth, red zone
Aspergillus niger ATCC® 16404	Ambient, up to 72 h @ 25-30°C	Inhibition (partial to complete)
Cryptococcus neoformans ATCC® 34877	Ambient, up to 72 h @ 25-30°C	Inhibition (partial to complete)
Escherichia coli ATCC® 25922	Ambient, up to 72 h @ 25-30°C	Inhibition (partial to complete)
Pseudomonas aeruginosa ATCC® 27853	Ambient, up to 72 h @ 25-30°C	Inhibition (partial to complete)
Staphylococcus aureus ATCC® 25923	Ambient, up to 72 h @ 25-30°C	Inhibition (partial to complete)

LIMITATIONS
1. DTM is primarily used as a screening test for detection of dermatophytes. Additional testing may be required for definitive identification.[2]
2. Specimens from heavily soil-contaminated sources (e.g., feet and nails) may contain saprophytic fungi which redden the medium. Such cultures may require additional interpretation to distinguish contaminating fungi from dermatophytes.[3,5]
3. Organisms other than dermatophytes (e.g., saprophytic fungi, yeast, and bacteria) may grow on DTM and produce alkaline metabolites. DTM should not be used as the only method for identification of dermatophytes.[2,3]

BIBLIOGRAPHY

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4. Miller, J.M. 1999. A Guide to Specimen Management in Clinical Microbiology. 2nd ed. ASM Press, Washington, D.C.
5. MacFaddin, J.F. 1985. Media for Isolation-Cultivation-Identification-Maintenance of Medical Bacteria. Vol. 1. Williams & Wilkins, Baltimore, MD.

Refer to the front of Remel *Technical Manual of Microbiological Media* for **General Information** regarding precautions, product storage and deterioration, specimen collection, storage and transportation, materials required, quality control, and limitations.

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