# DERMATOPHYTE TEST MEDIUM (DTM)

## PRODUCT:

**Tube and Bottle Media:**

Dermatophyte Test Medium, item no.'s T6370 (tube), B5127 & B5128 (bottles)

## PURPOSE:

Dermatophyte Test Medium (DTM) is a selective medium used for the isolation and presumptive identification of pathogenic dermatophytic fungi.

## PRINCIPLE:

Dermatophyte Test Medium is a modification of a commercial medium designed by Taplin.[3,5,6] Taplin added the antimicrobics gentamicin and tetracycline to inhibit most bacterial contaminants, and cycloheximide to inhibit many common molds. Also included in the medium are enrichments and a pH indicator. Dermatophytes (*Epidermophyton, Microsporum*, and *Trichophyton* species) all produce alkaline metabolites which affect the phenol red indicator, and the medium changes from orange to red. Other organisms may grow on the medium, but generally do not produce a change in color.

## FORMULA:

Approximate, per liter deionized filtered water.

| | |
|---|---|
| Papaic Digest of Soybean Meal | 10.0 g |
| Dextrose | 10.0 |
| Agar | 20.0 |
| Gentamicin | 182.0 mg |
| Cycloheximide | 500.0 |
| Tetracycline | 100.0 |
| Phenol Red | 200.0 |

Final pH 5.5 ± 0.2 at 25°C

## PRECAUTIONS:*

For in vitro diagnostic use. Observe approved biohazard precautions.

**Storage:** Upon receipt store at 2-8°C away from direct light. Media should not be used if there are signs of contamination, deterioration (shrinking, cracking, or discoloration), or if the expiration date has passed.

**Limitations:** Saprophytic fungi may affect a color change on the medium if the specimen is heavily contaminated. Certain nondermatophytes are capable of growing on the medium and affecting a positive color change.[1] Some saprophytic fungi may be recognized by their dark green to black hyphae; dermatophytes exhibit white aerial hyphae.

Interpretation of the media is questionable beyond 14 days and may result in a false-positive reaction.

*Blastomyces*, *Histoplasma*, and *Coccidioides* may turn the media red. However, the incubation period is longer and these organisms are not usually isolated from ringworm-type lesions.

The complete classification of dermatophytes, depends upon microscopic observations of direct or slide culture preparations, as well as physiological and serological tests.

DTM is more useful as a general screening test, as opposed to an identification test.

To assure optimal aerobic environment for the best recovery of dermatophytes, the caps must be loose.

Certain strains of yeast, in particular, *Candida albicans*, may cause a color change in the medium. These organisms produce a characteristic white bacterial-like colonial appearance.

False-negative reactions may occur if the dormant area of the infection is cultured.

Once isolated on DTM, the presumptive dermatophyte should be inoculated onto conventional media for identification.

## PROCEDURE:*

**Specimen Collection:** Information on specimen collection is found in standard reference material on the subject.[2] In general, specimens should be protected from extremes of heat and cold and should be delivered to the laboratory without delay.

**Method of Use:** Prior to inoculation, the medium should be brought to room temperature. The specimen may be inoculated directly onto the medium by pressing the specimen lightly into the surface of the medium, or a small amount of fungus may be placed onto the surface of the agar. A Sabouraud Dextrose Agar may be inoculated at the same time as a control.[1] Incubate at 25°-30°C for up to one week. Observe for a red color change in the medium. Most pathogenic dermatophytes will produce a full color change in 3-6 days.

**Interpretation:**

| | |
|---|---|
| Positive: | Red color around the fungal growth on DTM within one week.** |
| Negative: | Fungal growth but no color change. This indicates that the organism is probably not a dermatophyte. Further testing must be performed. |

NOTE: If growth occurs on the control medium (Sabouraud) and no growth occurs on DTM, the organism is not a dermatophyte.

**It is important that the medium be read within one week or immediately after the first growth is observed. Most nondermatophyte fungi that are capable of growing on this medium will eventually produce an alkaline reaction, resulting in a false-positive result.

**Materials Required but Not Provided:** Standard microbiological supplies and equipment such as loops, needles, slides, incinerator, and hood are not provided.

## QUALITY CONTROL:*

| Microorganisms Used (ATCC #): | Expected Result: |
|---|---|
| *Trichophyton mentagrophytes* (9533) | Growth; red color change |
| *Candida albicans* (10231) | Reduced growth; small amount of red color change |
| *Staphylococcus aureus* (25923) | Inhibition, partial to complete |
| | Key: See “Interpretation” |

**User Quality Control:** Check for signs of contamination and deterioration.

## BIBLIOGRAPHY:

1. Campbell, M. C., and J. L. Stewart, *The Medical Mycology Handbook*, John Wiley and Sons, New York, 1980.
2. Lennette, E. H., et al., *Manual of Clinical Microbiology*, 4th ed., American Society for Microbiology, Washington, D. C., 1985.
3. Rebell, E., and D. Taplin, *Dermatophytes*, 2nd ed., University of Miami Press, Miami, 1970.
4. Stewart, J. A., *Methods of Media Prepared for the Biological Sciences*, Charles C. Thomas, Springfield, Ill., 1974.
5. Taplin, D., *J. Invest. Der.*, 45: 545, 1965.
6. Taplin, D., et al., *Arch. Derm.*, 99:203, 1969.

*For more detailed information, consult appropriate references and/or details in the preface of the PML Technical Manual.

PML MICROBIOLOGICALS, INC.
Data #300

Revision Date: January 2001