



BD™ Dermatophyte Test Medium Agar

INTENDED USE

BD Dermatophyte Test Medium Agar is a selective medium for the isolation of pathogenic fungi from superficial infections such as skin, hair, and nails. It is made available as slants in screw-cap vials.

PRINCIPLES AND EXPLANATION OF THE PROCEDURE

Microbiological method.

In 1969, Taplin et al. developed this medium for the isolation of dermatophytes from skin lesions, such as ringworm, and from hair, nails and skin.¹ This medium is recommended for the isolation of dermatophytes and is especially useful for the isolation of the *Microsporum*, *Trichophyton*, and *Epidermophyton* genera.²⁻⁴

In **BD Dermatophyte Test Medium Agar** peptones supply nitrogen and are the source of alkaline products, produced by dermatophytes. When peptones are metabolized to alkaline products, a change of the phenol red indicator from yellow to red will take place.³ Glucose is added as a nutrient and to allow acidification by fungi able to primarily use glucose. Most fungi other than dermatophytes, including yeasts and filamentous fungi (if they are able to grow on the medium), will utilize glucose. This results in acid formation and no color change of phenol red which is the pH indicator. Cycloheximide is an inhibitor for moulds and non-pathogenic yeasts. Gentamicin and tetracyclin are antibacterial inhibitors. A few organisms, including saprophytes, yeasts, and bacteria, are capable of growing on the medium and changing the color from red to yellow, but they are easily recognized by their distinctive colonial morphology.

REAGENTS

BD Dermatophyte Test Medium Agar

Formula* Per Liter Purified Water

Papaic Digest of Soybean Meal	10.0 g
Glucose	10.0
Phenol Red	0.2
Cycloheximide	0.5
Gentamicin	0.1
Tetracyclin-HCl	0.1
Agar	20.0

pH 5.5 +/- 0.2

*Adjusted and/or supplemented as required to meet performance criteria.

PRECAUTIONS

IVD . For professional use only.

Do not use vials if they show evidence of microbial contamination, discoloration, drying, cracking or other signs of deterioration.

Wear protective gloves during preparation and collection of specimens. Consult **GENERAL INSTRUCTIONS FOR USE** document for aseptic handling procedures, biohazards, and disposal of used product.

STORAGE AND SHELF LIFE

On receipt, store vials in the dark at 2 to 8° C until just prior to use. Avoid freezing and overheating. The vials may be inoculated up to the expiration date (see container or package label) and incubated for the recommended incubation times.

Vials from opened packages can be used up to the expiration date when stored in the dark. Opened vials must be used immediately.

USER QUALITY CONTROL

Inoculate representative samples with the following strains (for details, see **GENERAL INSTRUCTIONS FOR USE** document). Incubate vials aerobically at 25 to 30° C for the time indicated below the Table.

Strains	Growth Results
* <i>Trichophyton mentagrophytes</i> ATCC™ 9533	Fluffy white colonies, red zones in medium surrounding colonies
* <i>Trichophyton equinum</i> ATCC 22443	Fluffy white colonies, red zones in medium surrounding colonies
*** <i>Candida albicans</i> ATCC 10231	Small to medium-sized, white to creamy colonies; medium yellow or with red zones in medium surrounding colonies
** <i>Aspergillus niger</i> ATCC 16404	Inhibition partial to complete
*** <i>Saccharomyces cerevisiae</i> NCPF 1211	Inhibition complete
*** <i>Escherichia coli</i> ATCC 25922	Inhibition complete
*** <i>Pseudomonas aeruginosa</i> ATCC 10145	Inhibition complete
*** <i>Staphylococcus aureus</i> ATCC 25923	Inhibition complete
Uninoculated	Yellow, clear to slightly opaque

Incubation: * 5 to 7 days; ** 4 to 5 days; *** 42 to 48 hours

PROCEDURE

Materials Provided

BD Dermatophyte Test Medium Agar slants in screw-cap vials. Microbiologically controlled.

Materials Not Provided

Ancillary culture media, reagents and laboratory equipment as required.

Specimen Types

BD Dermatophyte Test Medium Agar is a selective differential medium for the isolation of dermatophytes from clinical specimens like nails, hairs, and skin scrapings (see also **Test Procedure**). Swabs taken from infected areas are not the appropriate specimens for collecting dermatophytes. Consult the references for further details.³⁻⁵ Do not use this medium for specimens from sites other than those described below.

Specimen Collection and Test Procedure

Always use sterile instruments for specimen collection. Wear protective gloves to avoid infection!

Skin: Clean the affected site with 70% ethyl or isopropyl alcohol prior to removing skin scales. Remove scales from dry and peeling lesions by scraping from the inflamed edges towards the healthy skin with a scalpel. Disposable scalpels can easily hurt the skin (it is preferable to use only the back of the blade). Scrape large areas thoroughly and collect as much material as possible. With acute inflamed or vesicular lesions, the skin of the blister must be carefully removed with scissors and forceps. It should be cultured together with the content of the blister and, if possible, scales from the surrounding area.

With infiltrates or granulomatous processes, collect material from the depth and from skin folds with a sharp spoon or a vaccination lancet. Collect the material on a piece of filter paper and introduce the collected material into the vial containing **BD Dermatophyte Test Medium Agar**.

Hair: Pluck the roots of dull, lusterless hair with a forceps. Infected hair breaks and loosens more easily than healthy hair. If Wood's light is used, collect fluorescent hair, even if it looks healthy in daylight. If so-called black dots appear, lift the infected hair out of the bulb by using the edge of a scalpel. Do not use cut hair as a specimen. Distribute hair on the surface of the medium. Gently press hair onto the agar with the forceps.

Nails: In case of subungual infection, all grossly deformed surface parts of the nail are removed carefully with scissors, nail file, or scalpel. Chips of nail are then collected from the nail bed.

In case of surface infection, nail chips or small dustlike particles are scraped from the surface of the nail body. It is best to use a nail fraise. Collect the material on a clean piece of paper and introduce into the vial.

This medium is used for the isolation of dermatophytes such as *Microsporum*, *Trichophyton*, and *Epidermophyton*. Certain pathogenic fungi that are sensitive to the selective ingredients of this medium will be inhibited on this medium. Therefore, it is recommended to include a plate of **BD Sabouraud Glucose Agar**, **BD Sabouraud Agar with Chloramphenicol**, **BD Sabouraud Agar with Gentamicin and Chloramphenicol**, or **BD Sabouraud Agar with Penicillin and Streptomycin** to provide an indication of all fungal pathogens present in the specimen. After inoculation, incubate for 3 to 7 days at 25 to 30° C. If no growth is detected, continue incubation for an additional week, or longer if necessary. Note that some dermatophytes may need an incubation of more than 3 weeks.

Results

Examine vials after 3 to 6 days for an indicator change from yellow to red or pink and for the occurrence of typical dermatophyte colonies. *Candida* species may initially also produce a color change to red. Interpretation of the color reaction is questionable on this medium beyond 2 weeks of incubation. For a complete diagnosis and especially if no growth is obtained on **BD Dermatophyte Test Medium Agar**, the results on the Sabouraud based media mentioned above must be considered.

Since the number of dermatophytes is large, no details on their appearance can be given here. Consult the references.²⁻⁵

PERFORMANCE CHARACTERISTICS AND LIMITATIONS OF THE PROCEDURE

BD Dermatophyte Test Medium Agar is suitable for the isolation of dermatophytes (e.g., *Trichophyton*, *Epidermophyton*, and *Microsporum* species) and must only be used for the recovery of fungi from superficial infections (skin, hair and nails).²⁻⁵

It is not a universal isolation medium for fungi. Instead, one of the Sabouraud based media mentioned in **Specimen Collection and Test Procedure** should be used for the isolation of fungi from other body sites.

Certain pathogenic fungi, including certain strains of *Microsporum*, may be inhibited by cycloheximide. Occasionally, moulds and yeasts that are inhibited on this medium may produce cutaneous infections. Therefore, it is recommended that all specimens are also inoculated on one of the less selective media mentioned in **Specimen Collection and Test Procedure**.

Appropriate confirmatory tests must be performed to obtain a final identification of the pathogens isolated on these media.²⁻⁵

BD Dermatophyte Test Medium Agar or the Sabouraud based media mentioned above are not suitable for the isolation of bacteria which may also produce skin infections. Therefore, if a bacterial infection cannot be excluded, appropriate nonselective plated media, such as **BD Columbia Agar with 5% Sheep Blood** must be inoculated with the specimen.

After 2 weeks of incubation, certain saprophytic fungi may produce false positive reactions on **BD Dermatophyte Test Medium Agar**.²

REFERENCES

1. Taplin, D., et al. 1969. Isolation and recognition of dermatophytes on a new medium (DTM). *Arch. Dermatol.* 99: 203.
2. MacFaddin, J. D. 1985. Media for isolation-cultivation-identification-maintenance of medical bacteria, vol. 1, p. 275-284. Williams & Wilkins, Baltimore, MD.
3. Sutton, D.A. 2003. Specimen collection, transport, and processing: mycology. *In: Murray, P. R., E. J. Baron, J.H. Jorgensen, M. A. Pfaller, and R. H. Tenover (ed.). Manual of clinical microbiology, 8th ed. American Society for Microbiology, Washington, D.C.*
4. Summerbell, R.C. 2003. *Trichophyton*, *Microsporum*, *Epidermophyton*, and agents of superficial mycoses. *In: Murray, P. R., E. J. Baron, J.H. Jorgensen, M. A. Pfaller, and R. H. Tenover (ed.). Manual of clinical microbiology, 8th ed. American Society for Microbiology, Washington, D.C.*

5. Larone, D.H. 1995: Medically important fungi - a guide to identification. 3rd edition. ASM Press, Washington.

PACKAGING/AVAILABILITY

BD Dermatophyte Test Medium Agar (Ready-to-use bottled medium)

Cat. No. 257147 cpu 20 Slants (15 ml) in 30 ml screw-cap vials

FURTHER INFORMATION

For further information please contact your local BD representative.



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