IFU

Instructions for Use

BACTI-LAB SKIN CULTURE SYSTEMS™

Cat. no. X15	DTM, Dermatophyte Test Medium, 50ml Hardy Flask™, 12ml	20 flasks/box
Cat. No J175	Derm-Duet™ II*, RSM™/DTM, 15x100 Biplate, 15ml/15ml, Individually wrapped	10 individually wrapped plates/box
Cat. no. J350	Derm-Duet™*, RSM™/DTM, 15x100mm Biplate, 15ml/15ml	10 plates/bag
Cat. no. J850	Sab-Duet™*, DTM/Mycobiotic, 15x100mm Biplate, 15ml/15ml	10 plates/bag
Cat. no. W50	Mycobiotic Agar* (formerly Mycotec), 15x100mm Monoplate, 26ml	10 plates/bag
Cat. no. AD100M	AnaeroDisc™, Flat Bottom, Irradiated*	100 discs/bag
*AnaeroDisc™ sold separately for performing simple microscopic slide fungal exams		

INTENDED USE

Hardy Diagnostics' Bacti-Lab Skin Culture Systems™ are diagnostic culture test kits for the detection of dermatophytic fungi. The culture media is ready-for-use and provides simplified culture procedures for the isolation, detection and speciation of dermatophytes (*Microsporum, Epidermophyton, Trichophyton*) commonly seen from hair, skin, and nail specimens in a human or veterinary clinical setting.

Cat. No. J175 is not intended to be used for the diagnosis of human disease.

SUMMARY

Medical mycology is the study of fungi that cause infections in humans and animals. Fungi are a large group of living organisms that do not possess the definite root, stem, or leaf structure present in higher plant forms. Because fungi are also lacking in chlorophyll, they in general are unable to use atmospheric carbon dioxide to form organic matter, but instead must obtain their food in a ready-made form. The vast majority of all fungi feed only on dead organic matter and are called saprophytes, whereas those that can infect living organisms are the parasitic pathogenic fungi. Parasitic fungi can be further classified as to their site of infection. Superficial skin mycotic infections (i.e. Dermatomycoses) and deep mycotic infections of other organ systems with secondary cutaneous lesions may be manifested.

Fortunately, for diagnostic purposes, parasitic dermatophytic fungi can be cultivated on synthetic culture media such as Bacti-Lab Skin Culture Systems™. Dermatophytes are a specialized group of parasitic fungi that include the genera *Microsporum*, *Epidermophyton* and *Trichophyton*. These fungi live only on nonviable keratin of the skin, hair and nails, but do not invade the deeper living layers of the skin, as they do not survive in these cells. They are responsible for the tinea (ringworm) infections of the skin, hair and nails. When used in conjunction with media for bacterial culture, these fungal culture products provide for a simple comprehensive analysis of the pyogenic and dermatophytic microorganisms that cause the vast majority of the infectious skin lesions seen in the clinical practice of both human and veterinary medicine.

DTM (Dermatophyte Test Medium) is a useful means to quickly identify the presence of dermatophytic fungi. The inoculation of a specimen containing a dermatophytic fungus on DTM will result in the formation of alkaline products which will change the pH color indicator phenol red from yellow to deep red. The medium also contains antibacterial compounds and antifungal agents which prevent overgrowth by contaminating saprophytic fungi and bacteria – thus allowing the selective isolation of dermatophytes.[1] DTM,

however does not enhance sporulation of dermatophytes which is necessary for speciation. Also, because of its intense red color, DTM masks diagnostically important colony color pigments produced by various dermatophytes.[2]

RSM™ (Rapid Sporulation Medium) is similar to DTM in several respects; it contains a color indicator which changes from yellow to shades of blue-green.[3] The color change of RSM™ will not be as intense as with DTM and a gradual reversion of the blue color to a light-blue green may occur with some dermatophyte strains on prolonged incubation. It also contains antibacterial and antifungal compounds which inhibit the growth of contaminants. It thus acts as a highly selective medium for isolation of dermatophytes. The major difference between RSM™ and DTM is that RSM™ enhances sporulation of the dermatophytic fungi. The rapidly forming spores (macroconidia) can be viewed microscopically for identification on the chart below. This is an additional advantage to those interested in rapid diagnostic capabilities.[2]

Derm-Duet™ and **Derm-Duet™ II** are traditional round two-section test plates containing RSM™ and DTM, which provide the user with the simultaneous advantage of the rapid sporulation of RSM™ and the distinctive color change of DTM. Note: Some strains will exhibit a diminished growth rate on RSM™, as compared to DTM, when grown under the same conditions for the same time period. The **Derm-Duet™ II** contains the same RSM™/DTM media combination in a rectangular biplate format. **Derm-Duet™ II** and **Derm-Duet**™ plates are also individually wrapped and hermetically sealed for ease-of-use and an extended shelf life.

Sab-Duet™ is a two-section test plate with DTM and Mycobiotic Agar (described below).

Mycobiotic Agar (formerly “Mycotec”) is a single-section test plate with Sabouraud’s Dextrose Agar containing antibiotics making it selective for pathogenic fungi. This medium contains dextrose, peptones, chloramphenicol and cycloheximide but lacks a pH indicator. This medium allows for the development of the classical pigmented colony color and morphology of pathogenic fungal species, while inhibiting most bacteria and saprophytic fungi.

FORMULA

Ingredients per liter of deionized water:*

RSM™, Rapid Sporulation Medium	
Peptone	12.0gm
Dextrose	10.0gm
Selective Agents	0.6gm
pH Indicator	0.15gm
Agar	18.0gm

Final pH 6.5 +/- 0.2 at 25 degrees C.

DTM, Dermatophyte Test Medium	
Soy Peptone	10.0gm
Dextrose	10.0gm
Cycloheximide	0.5gm
Phenol Red	0.2gm
Gentamicin	0.1gm
Chlortetracycline	0.1gm
Agar	20.0gm

Final pH 5.6 +/- 0.1 at 25 degrees C.

Mycobiotic Agar	
Pancreatic Digest of Soybean Meal	10.0gm
Dextrose	10.0gm
Cycloheximide	0.4gm
Chloramphenicol	0.05gm
Agar	15.5gm

Final pH 6.5 +/- 0.3 at 25 degrees C.

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

STORAGE AND SHELF LIFE

Storage: Upon receipt store at 2-8 degrees C. away from direct light, except for Cat. no. J175 which should be stored at 15-30 degrees C. Media should not be used if there are any signs of deterioration (shrinking, cracking, or discoloration), contamination, or if the expiration date has passed. Product is light and temperature sensitive; protect from light, excessive heat, moisture, and freezing.

The expiration date on the product label applies to the product in its intact packaging when stored as directed. The product may be used and tested up to the expiration date on the product label and incubated for the recommended incubation times as stated below.

Products must be brought to room temperature before use.

Refer to the document "Storage" for more information.

PRECAUTIONS

These products are for *in vitro* diagnostic use only, except Cat. no. J175 which is for laboratory use only, and are to be used only by adequately trained and qualified laboratory personnel. Observe approved biohazard precautions and aseptic techniques. All laboratory specimens should be considered infectious and handled according to "standard precautions". Refer to the document "Guidelines for Isolation Precautions" from the Centers for Disease Control and Prevention.

For additional information regarding specific precautions for the prevention of the transmission of all infectious agents from laboratory instruments and materials, and for recommendations for the management of exposure to infectious disease, refer to CLSI document M-29: *Protection of Laboratory Workers from Occupationally Acquired Infections: Approved Guideline.*

A conveniently placed container of CaviCide® (Cat. no. 131000) may be used for a ten minute fungicidal immersion of used swabs, scalpel blades and AnaeroDiscs™ (Cat. no. AD100M). The same solution can be used to flood culture plates after studies are completed. Follow local public health department recommendations for disposal.

Refer to the document "Precautions When Using Media" for more information.

PROCEDURE

COLLECTING THE SPECIMEN: Dependant upon the appearance of the lesion, consider the possibility of a bacterial etiology and perform a bacterial culture in addition to the fungal culture.

Skin:

1. Snip away surrounding hairs.
2. Scrape fragments with No. 10-15 scalpel or No. 64 Beaver blade (for eyelids) from active disease area, usually a border region, onto side of blade.

Hair and Scalp:

1. Scrape active border areas showing scaling or hair loss with a clean disposable comb or a clean unused toothbrush (Cat. no. TB25).
2. Suspicious hairs; intact, broken or stubs can be plucked with forceps.
3. Use of a UV light can occasionally be a helpful adjunct in the selection of infected hairs for culture. *M. canis* and *M. audouinii* may fluoresce a brilliant greenish-yellow. False-negative results are common.

Nails:

1. Using nail clippers or scissors, clip major portion of affected nail.
2. In canine species, consider anesthesia with removal of entire nail.
3. Using scalpel blade, scrape under surface of nail at nailbed junction for tissue. For best results employ several samples.

DIRECT SLIDE EXAMINATION OF SPECIMEN

1. If desired, perform a direct microscopic examination of the specimen. A KOH (potassium hydroxide) solution will dissolve any extraneous tissue cells that could mask the presence of a fungal pathogen. Use either 20% KOH (Cat. no. Z78) or SoluPhyte™ (Cat. no. Z178).
2. Place a drop of KOH or SoluPhyte™ in the center of a clean slide (Cat. no. PF72P).
3. Mix a portion of the specimen in the drop.
4. Apply a cover glass (Cat. no. 1818HD) and press gently to make a thin mount.
5. Gentle warming may aid in clearing the mount. This step is not needed when using SoluPhyte™.
6. The slide can be examined immediately under low or high dry magnification.

INOCULATION, INCUBATION, AND EXAMINATION

Inoculation of media:

1. Transfer fragments (skin, nail, hairs, pus, etc.) by rubbing broad side of blade onto agar surface.
2. Tap specimen lightly. Do not submerge the specimen into the media.
3. AnaeroDisc™ (Cat. no. AD100M) may also be placed directly on one corner of culture media at the time of specimen inoculation and then transferred directly to the microscope slide at the earliest appearance of fungal growth for microscopic examination.
4. Close lid and incubate the plate with the lid side down.

Incubation:

1. Label the bottom of the plate (not the lid) and incubate the plate with the lid facing down at room temperature (25-34 degrees C.) for up to 12 days maximum. False-positives may develop with prolonged incubation.
2. In order to decrease dehydration of the media experienced during extended incubation, plates may be placed in a plastic zip-loc bag (Cat. no. ZIP).
3. Cattle ringworm (*Trichophyton verrucosum*) on DTM develop more rapidly at 37 degrees C.
4. Examine every two to three days for characteristic color change and colony appearance.

Slide Examination of Fungal Growth from RSM™ or Mycobiotic Agar

1. Prepare the microscope slide (Cat. no. PF72P) by placing a single drop of Lactophenol Cotton Blue Stain (Cat. no. Z68) on the center. For the preparation of a permanent stained slide, use one drop of BlueMount™ (Cat. no. Z137).
2. For transfer of the culture use one of the two methods listed below:
    a. To use the AnaeroDisc™ (Cat. no. AD100M), grasp the handle of the disc with forceps (Cat. no. 113118) and directly touch the undersurface of plastic to the aerial fungal conidia on the plate for transfer to the prepared slide. (The AnaeroDisc™ is for use on RSM™ or Mycobiotic Agar. Do not use a culture grown on DTM, since this media does not induce sporulation.) Remove AnaeroDisc™ and apply cover glass (Cat. no. 1818HD).
    b. To use MycoMount™ (Cat. no. MM40), take one strip from the container and remove the paper from the adhesive on the far end of the strip using forceps. Do not remove the paper in the middle of the strip yet. Place a drop of Lactophenol Cotton Blue or BlueMount™ on the right side of the slide. Open the Petri plate and press the exposed adhesive tip gently to the culture to pick up the fruiting structures of the mature mold colony. Using forceps now remove the paper from the middle of the strip and press the strip to the slide.
3. The slide can be examined for spores (micro and macroconidia) immediately under low or high dry magnification and using reduced light (close the iris diaphram). If using BlueMount™ with a cover glass, the slide may be dried on a flat surface for a period of two to four days, and can then be examined under oil immersion.

INTERPRETATION OF RESULTS

1. Most dermatophytes will, within 3-7 days, display a positive test by producing a progressive red color change of the DTM medium (which is originally yellowish-orange). The dermatophytes will produce a blue-green color change on RSM™ (which is originally greenish-yellow). Most saprophytic fungi and bacteria will be inhibited on both DTM and RSM™.
2. Incubation should be continued at room temperature for 12 days to elicit color changes of slow growers, e.g. *Trichophyton rubrum.* Discard plates after 12 days to avoid false-positives.
3. Fungal slide examination should be performed only from Mycobiotic Agar or RSM™.
4. Saprophytes which are able to grow will not change the color of the indicator in the media.
5. Interpret colony characteristics, color, and form by viewing the top and reverse surface of the Mycobiotic Agar and compare to color photographs of standard mycology texts.[5-8] Example: Reverse side of *Microsporum canis* – yellow to orange color; *T. mentagrophytes* – tan to brown; *T. rubrum* – red to purple.
6. *Candida* species appear as a dull (matte) cream color on Mycobiotic Agar, DTM and RSM™ agars. Some strains of yeast may produce a color change on DTM and RSM™.

See the identification chart at the end of this document for further assistance with identification.

LIMITATIONS

False-Negatives:

1. The following organisms are sensitive to the cycloheximide contained in the DTM, RSM™ and Mycobiotic Agar and usually will not grow: *Cryptococcus neoformans, Pseudallescheria boydii, Actinomyces* species, *Streptomyces* species, *Candida krusei, Candida tropicalis, Piedria hortai, Trichosporon cutaneum, Candida glabrata* and yeast phases of dimorphic fungi, such as *Blastomyces dermatitidis, Coccidioides immitis,* and *Histoplasma capsulatum.*
2. Iodine and fungicidal medications may cause sterilization of the specimen. For best results, several areas should be sampled.
3. Two other pathogenic microorganisms, aside from those sensitive to cycloheximide, cannot be routinely isolated on these media when held at room temperature. *Actinomyces bovis* requires anaerobic conditions and is sensitive to the antibacterial agents in the media. *Blastomyces dermatitidis* is best isolated on BHI Agar with Blood (Cat. no. A20) held at 37 degrees C. Typically these are not a cause of ringworm lesions.

False-Positives: may be divided into five groups.

1. Non-dermatophytic fungi that can cause a false-positive red (DTM) or blue-green (RSM™) color change include: *Cladosporium* species, *Scopulariopsis brevicaulis, Alternaria* species, etc. DTM and RSM™ cultures should not be evaluated for color after 12 days since contaminant fungal growth may by this time cause a false-positive color change of the media.
2. Non-dermatophytic fungi (causing deep-seated mycoses) that can cause false-positive color changes: *Coccidiodes immitis, Histoplasma capsulatum, Blastomyces dermatitidis, Sporothrix schenckii*.
3. Keratinophilic species (including many dermatophytes) of fungi whose normal habitat is the soil (geophilic) not known to infect man or animals, or to be rare infectious agents of man or animals, but able to create a false-positive color change on RSM™ and DTM media: *Trichophyton terrestre, Chrysosporium* species, some *Arthroderma* species, *T. georgiae* and *T. gloriae*.
4. Bacteria not completely suppressed by antibacterial compounds in the media may rarely cause strong alkaline false-positive pH color change during growth; such as *Proteus* species and *Pseudomonas* species.
5. Some non-dermatophytic (contaminant strains) that may grow on both RSM™ and DTM, but typically do not cause any color change of the media: *Penicillium* species, *Aspergillus* species, *Acremonium* (Cephalosporium) species, *Geotrichum candidum* and some isolates of *Candida albicans*.

However, of great diagnostic importance is the fact that only three fungi cause 99% of all clinical cases of ringworm in dogs and cats in America. These are *Microsporum canis, Microsporum gypseum,* and *Trichophyton mentagrophytes* (var. *granulare*).[6] Human infections have a wider spectrum of offending dermatophytes and the use of RSM™ with slide exam greatly simplifies diagnostic mycology. For human ringworm disease, the three main pathogens will be *Trichophyton tonsurans* (45%), *T. rubrum* (41%) and *T. mentagrophytes* (4%).[9]

Refer to the keyword "Limitations", in the Hardy Diagnostics software program HUGO™, for more information regarding general limitations on culture media.

MATERIALS REQUIRED BUT NOT PROVIDED

Standard microbiological supplies and equipment such as loops, swabs, scalpels, AnaeroDiscs™ (Cat. no. AD100M), KOH solution (Cat. no. Z78), SoluPhyte™ (Cat. no. Z178), Lactophenol Cotton Blue Stain (Cat. no. Z68), plastic zip-loc bags (Cat. no. ZIP), slide cover glass (Cat. no. 1818HD), applicator sticks, slides (Cat. no. PF72P), stains, other culture media, incinerators, and incubators, etc., as well as serological and biochemical reagents, are not provided.

QUALITY CONTROL

Hardy Diagnostics tests each lot of commercially manufactured media using appropriate quality control microorganisms and quality specifications as outlined on the Certificate of Analysis (CofA) and the CLSI document M22-A3 *Quality Assurance for Commercially Prepared Microbiological Culture Media*. The following microorganisms are routinely used for testing at Hardy Diagnostics:

RSM™, Rapid Sporulation Medium					
Test Organisms	**Inoculation Method***	**Incubation**			**Results**
		Time	**Temperature**	**Atmosphere**	
Trichophyton mentagrophytes	G	4-7 days	15-30°C	Aerobic	Growth; white colony with green to blue color change of the media

ATCC® 9533					
Candida albicans ATCC® 10231	A	24hr	15-30°C	Aerobic	Growth; small white colonies, may cause color change of the media to green or blue with prolonged incubation
Aspergillus brasiliensis formerly *A. niger* ATCC® 16404	G	7 days	15-30°C	Aerobic	Partial to complete inhibition; no color change
Escherichia coli ATCC® 25922	B	24hr	35°C	Aerobic	Partial to complete inhibition
Staphylococcus aureus ATCC® 25923	B	24hr	35°C	Aerobic	Partial to complete inhibition
Pseudomonas aeruginosa ATCC® 27853	B	24hr	35°C	Aerobic	Partial to complete inhibition

DTM, Dermatophyte Test Medium					
Test Organisms	**Inoculation Method***	**Incubation**			**Results**
		Time	**Temperature**	**Atmosphere**	
Trichophyton mentagrophytes ATCC® 9533	G	4-7 days	15-30°C	Aerobic	Growth; white colony with pink to red color change of the media
Candida albicans ATCC® 10231	A	24hr	15-30°C	Aerobic	Growth; small white colonies, may cause color change of the media to pink or red with prolonged incubation
Aspergillus brasiliensis formerly *A. niger* ATCC® 16404	G	7 days	15-30°C	Aerobic	Partial to complete inhibition; no color change
Escherichia coli ATCC® 25922	B	24hr	35°C	Aerobic	Partial to complete inhibition
Staphylococcus aureus ATCC® 25923	B	24hr	35°C	Aerobic	Partial to complete inhibition
Pseudomonas aeruginosa ATCC® 27853	B	24hr	35°C	Aerobic	Partial to complete inhibition

Mycobiotic Agar					
Test Organisms	**Inoculation Method***	**Incubation**			**Results**
		Time	**Temperature**	**Atmosphere**	
Trichophyton mentagrophytes ATCC® 9533	G	7 days	15-30°C	Aerobic	Growth
Candida albicans ATCC® 10231	A	7 days	15-30°C	Aerobic	Growth
Escherichia coli ATCC® 25922	B	7 days	15-30°C	Aerobic	Partial to complete inhibition
Aspergillus brasiliensis formerly *A. niger* ATCC® 16404	G	7 days	15-30°C	Aerobic	Partial to complete inhibition

* Refer to the document "Inoculation Procedures for Media QC" for more information.

USER QUALITY CONTROL

As with all laboratory procedures, the person performing the test should first carefully read all the directions and follow them exactly to provide reliable results.

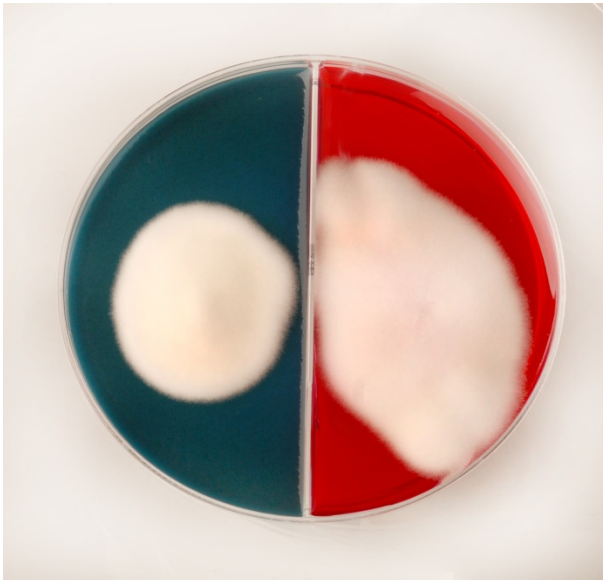
Check for signs of contamination and deterioration. Users of commercially prepared media may be required to perform quality control testing with at least one known organism to demonstrate growth or a positive reaction; and at least one organism to demonstrate inhibition or a negative reaction (where applicable). Also see listed references for more information.

PHYSICAL APPEARANCE

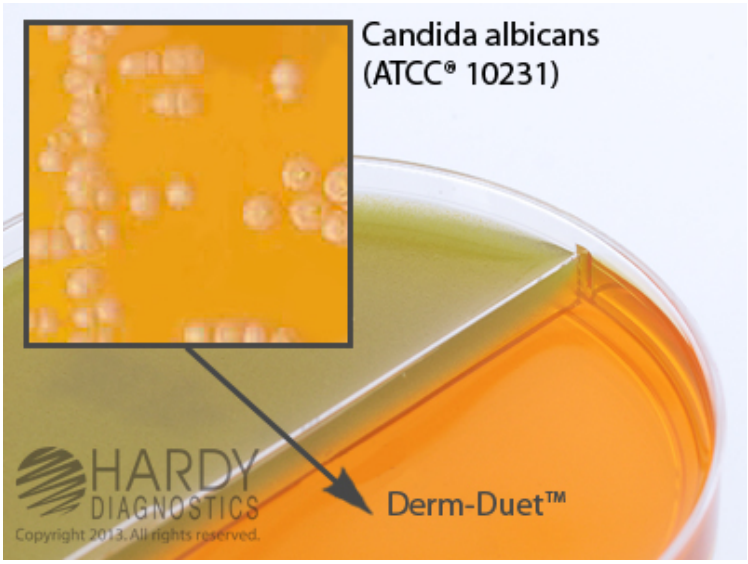
Mycobiotic Agar should appear slightly opalescent, and light amber in color.

DTM should appear clear to slightly opaque, and yellow-orange in color.

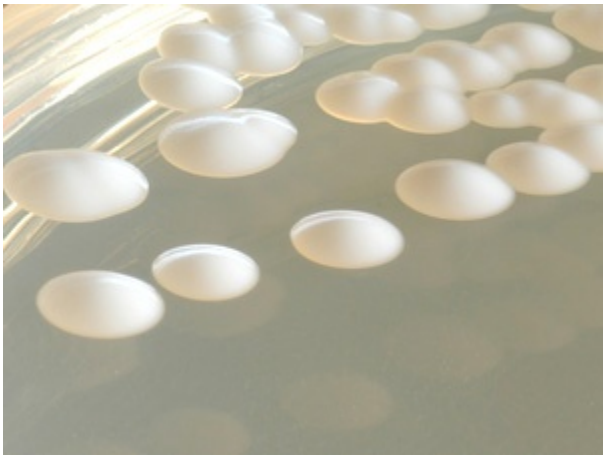
RSM™ should appear opaque, and greenish-yellow in color.



Typical growth of dermatophyte species growing on Derm-Duet™ (Cat. no. J350). Incubated aerobically for 5 to 7 days at room temperature.



Candida albicans (ATCC® 10231) colonies growing on Derm-Duet™ (Cat. no. J350). Incubated aerobically for 24 hours at room temperature.



Candida albicans (ATCC® 10231) colonies growing on Mycobiotic Agar (Cat. no. W50). Incubated aerobically for 7 days at room temperature.

Trichophyton mentagrophytes (ATCC® 9533) colonies growing on Mycobiotic Agar (Cat. no. W50). Incubated aerobically for 7 days at room temperature.

REFERENCES

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3. Rinaldi, M.G., Stevens, V.J., and Halde, C. 1973. *A New Sporulation Medium for Primary Isolation and Identification of Dermatophytes.* Abs: AmerSoc. Micro. Meeting, Miami.
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HARDY DIAGNOSTICS

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The Hardy Diagnostics' manufacturing facility and quality management system is certified to ISO 13485.

Terms for the Differential Table (next 2 pages)

Fungi: Nucleated, spore-bearing non-chlorophyll producing organisms which generally reproduce sexually and asexually, and whose filamentous, branched somatic structures are typically surrounded by rigid cell walls.

Clavate: Club-shaped.

Hyphae: The basic filamentous unit of structure of the fungi, a tubular filament.

Mycelium: Tangled mass of filamentous hyphae making up a colony (thallus) of a fungus.

Conidium: The specialized portion of a hyphal element that can fragment off as a single cell (spore) from either a lateral or terminal location on the stalk and can reproduce asexually into a new thallus or colony.

Microconidium: Small single cell conidium.

Macroconidium: Larger multi-cellular conidium.

Fusiform: Spindle-shaped (tapered ends).

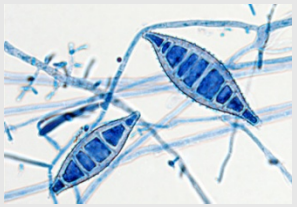
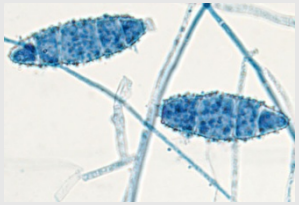
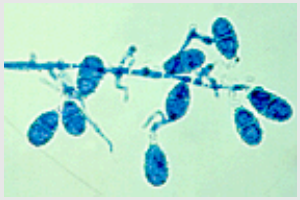
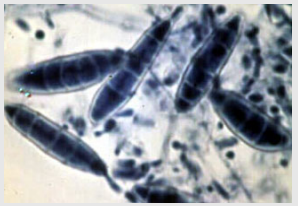
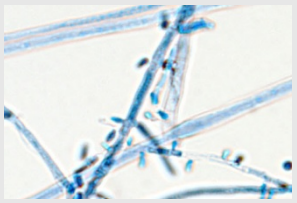
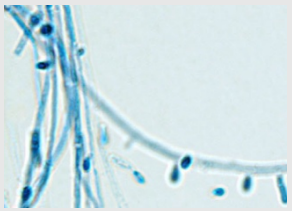
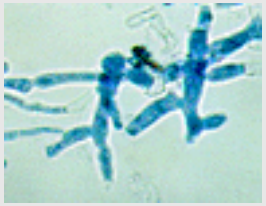
Pyriform: Pear-shaped.

Usual Time: refers to the number of days until the appearance of spores and pigment on RSM™.

Dermatophytes Commonly Seen in Human and Veterinary Practice

See list of terms above and refer to references.[5-7]

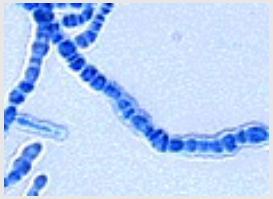
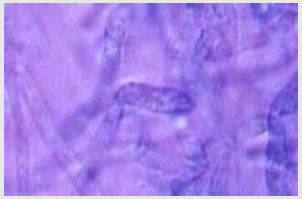
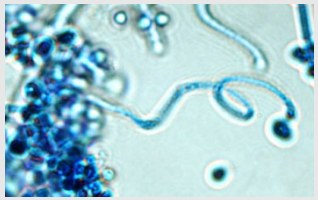
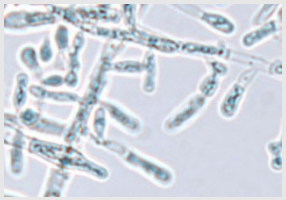
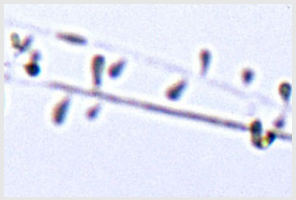
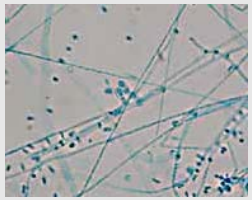
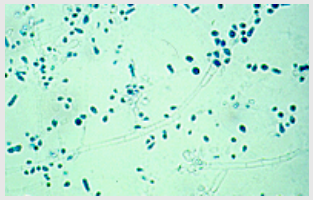
* = of diagnostic importance

	Microsporum canis	***Microsporum gypseum***	***Microsporum nanum***	***Microsporum gallinae***	***Epidermopyton floccosum***
Species and Incidence	Human: 3% (mostly children, usually scalp and skin) Dogs: 70% Cats: 98%	Human: rare (usually scalp and skin) Dogs: 20% Cats: 1%	Human: rare Pigs: usual	Human: rare Fowl: usual	Infects only humans: 1% (usually groin, feet or nails) Rare in animals
Colony Appearance (Top View)	White and fluffy center with golden yellow border Closely spaced radial grooves	Mostly cinnamon-buff (yellowish-brown) with white border Rapidly spreading mycelium	White to buff (yellowish-brown) with a powdery appearance	White to pink with a velvety appearance	Olive green to yellow-mustard color Colony folded and lumpy
Reverse Colony Color (Undersurface view)	*Yellow that dulls to brown with age	Cream, tan to red brown	Initially orange, later red-brown	Red pigment that diffuses into the media	Orange to brown Will not survive refrigeration
Microscopic Macroconidia **(taken from RSM™ or Mycobiotic media)**	 *Knob end and spiny with a rough, thick wall 6 or more cells	 *Many, spiny thin wall with 3 to 6 cells, rounded ends	 *Many, oval shape with thin spiny wall 1 to 3 cells (usually 2)	 *Many, clavate Often curved with thin smooth wall, 4-10 cells	 *Blunt-clavate Smooth walls In groups of 2, 2- 6 cells
Microscopic Microconidia **(taken from RSM™ or Mycobiotic media)**	 *Few, form along hyphae Pyriform to round	 Clavate Non-diagnostic	 *Few to moderate, clavate	 Few or abundant Clavate to pyriform Non-diagnostic	None formed
Usual Time (days)	5 – 10	4 – 6	5 – 7	6 – 10	7 – 10

Dermatophytes Commonly Seen in Human and Veterinary Practice (continued)

See list of terms above and refer to references.[5-7]

* = of diagnostic importance

	Trichophyton mentagrophtes	***Trichophyton tonsurans***	***Trichophyton rubrum***	***Trichophyton verrucosum***	***Trichophyton equinum***
Species and Incidence	Human: 9% (skin, scalp, hair, nails, esp. feet & groin) Dogs: 10% Cats: 1%	Infects only humans: 45% (usually scalp, also skin and nails)	Infects only humans: 41% (usually skin, feet, hands, nails, groin, very rare in hair and scalp) Rare in animals	Cattle: usual Human, horses, sheep: occasional	Human: very rare Horses: usual
Colony Appearance (Top View)	Buff and powdery or white and downy	Velvety with rugose folds Color variable	White to buff, fluffy and downy	White, sometimes yellow or gray Velvety appearance and heaped, smaller colonies	Cream to tan and velvety
Reverse Colony Color (Undersurface view)	Brown to tan (usual), dark red, or yellow	Mahogany to reddish-brown Sometimes yellow or colorless	*Deep red, wine; sometimes brown, yellow or colorless	White, sometimes yellow	Yellow to red-brown
Microscopic Macroconidia **(taken from RSM™ or Mycobiotic media)**	 Cigar-shaped with thin smoothed walls	 Rare, thin smooth walls, irregular shape Non-diagnostic	 2-8 cells, parallel sides Rarely seen	 *Rare, long, thin and smooth wall Many chlamydospore chains	 Rare, clavate Thin and smooth wall 3 to 5 cells
Microscopic Microconidia **(taken from RSM™ or Mycobiotic media)**	 * Rare to numerous Round to pyriform Often with coiled or spiral hyphae	 *Variable Branched and tear, clavate or bubble shaped	 *Born singly on hyphae Small, pyriform	 Rare, pyriform to clavate Non-diagnostic	 *Many, on hyphae and pyriform to round
Usual Time (days)	7 – 10	8 – 12	10 – 12	10 – 12, grows best at 37ºC	4 – 5