MAYO CLINIC LABORATORIES

Test Definition: MTBS

Microsporidia Stain, Varies

Overview

Useful For

Diagnosis of extra-intestinal microsporidiosis involving the lung, skin, and other organs, particularly in immunocompromised hosts

Diagnosis of ocular microsporidiosis

Testing Algorithm

For more information see Parasitic Investigation of Stool Specimens Algorithm

Special Instructions

- Parasitic Investigation of Stool Specimens Algorithm

Method Name

Trichrome-Blue Stain (Ryan Modification)

NY State Available

Yes

Specimen

Specimen Type

Varies

Ordering Guidance

This test is intended to be ordered on specimens other than stool and urine.

Specimen Required

Submit only 1 of the following specimens:

Specimen Type: Duodenal aspirate (small intestinal aspirate, jejunal aspirate, small bowel aspirate)
Container/Tube: Sterile container
Specimen Volume: 0.5 mL
Additional Information: ECOFIX and 10% formalin are acceptable preservatives.
Specimen Stability Information: Preserved Ambient (preferred) <10 days/Refrigerated <3 days

Specimen Type: Respiratory secretions (bronchoalveolar lavage [BAL], sputum, bronchial wash, pleural fluid)
Container/Tube: Sterile container
Specimen Volume: 0.5 mL
Specimen Stability Information: Refrigerated <3 days (preferred)/Frozen <10 days

Specimen Type: Eye (vitreous fluid, ocular fluid)
Container/Tube: Sterile container
Specimen Volume: 0.5 mL
Specimen Stability: Refrigerated <3 days

Specimen Type: Corneal scraping
Container/Tube: Sterile container
Specimen Volume: 0.5mL in sterile saline
Additional Information: Place scrapings in sterile saline for shipping.
Specimen Stability: Refrigerated <3 days

Specimen Type: Fresh tissue (lung, eye, bladder, rectal, intestinal, colon, skin, muscle, kidney)
Container/Tube: Sterile container
Specimen Volume: 3-mm biopsy in 0.1-mL sterile saline
Specimen Stability: Refrigerated <3 days

Specimen Type: Gallbladder aspirate/Bile aspirate
Container/Tube: Sterile container
Specimen Volume: 0.5 mL
Specimen Stability: Refrigerated <3 days/Frozen <10 days

Forms
If not ordering electronically, complete, print, and send a Microbiology Test Request (T244) with the specimen.

Specimen Minimum Volume
See Specimen Required

Reject Due To

All specimens will be evaluated at Mayo Clinic Laboratories for test suitability.

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Varies	Varies		

Clinical & Interpretive

Clinical Information
Microsporidia are highly specialized fungi that cause a wide variety of clinical syndromes in humans. The most common microsporidia are *Enterocytozoon bieneusi* and *Encephalitozoon intestinalis*, which infect the gastrointestinal tract and cause a diarrheal illness, and *Encephalitozoon cuniculi* and *Encephalitozoon hellem,* which can infect the conjunctiva, respiratory tract, and genitourinary system. Human infections have been reported most frequently in patients with AIDS, but also can occur in other immunocompromised patients, including solid organ allograft recipients and, sporadically,

immunocompetent hosts. Less commonly, other microsporidia such as *Vittaforma corneae* and *Brachiola* species can cause disseminated or organ-specific disease. Diagnosis of microsporidiosis is traditionally performed by light microscopic examination of stool, urine, and other specimens using a strong trichrome (chromotrope 2R) stain for detection of the characteristic spores. Unfortunately, microscopic identification can be challenging due to the small size of the spores (1-4 micrometer) and their resemblance to yeast. Molecular detection using species-specific polymerase chain reaction offers improved sensitivity and specificity and is available for the microsporidia that cause the majority of intestinal and renal infections (ie, *Encephalitozoon* species and *Enterocytozoon bieneusi*). The microsporidia stain is reserved for use with other (nonstool and nonurine) specimen sources due to the variety of other species that may be detected outside of the intestinal tract and kidney.

The antihelmintic drug, albendazole has been found effective in some infections due to *Enterocytozoon bieneusi* and *Encephalitozoon* (*Septata*) *intestinalis*.

Reference Values

Negative
If positive, reported as Microsporidia detected

Interpretation

A positive result suggests an active or recent infection. Results should be correlated with the patient's clinical presentation and immune status.

A negative result indicates absence of detectable microsporidial spores in the specimen but does not always rule out ongoing microsporidiosis since the organism may be present at very low levels or shed sporadically.

Cautions

These organisms are very difficult to identify among the multitude of organisms and artifactual debris present in feces.

Clinical Reference

1. Weber R, Bryan RT, Schwartz DA, Owen RL. Human microsporidial infections. Clin Microbiol Rev. 1994;7:426-461
2. Goodgame RW. Understanding intestinal spore-forming protozoa: cryptosporidia, microsporidia, isospora, and cyclospora. Ann Intern Med. 1996;124:429-441
3. Wanke CA, DeGirolami P, Federman M. *Enterocytozoon bieneusi* infection and diarrheal disease in patients who were not infected with human immunodeficiency virus: case report and review. Clin Infect Dis. 1996;23:816-818
4. Special Stains for Microsporidia: Modified Trichrome-Ryan Blue. American Society of Microbiology. Updated December 19, 2022. Accessed August 31, 2023. Available at www.clinmicronow.org/doi/10.1128/9781683670438.CMPH.ch9.4-4
5. Special Stains for Microsporidia: Modified Trichrome-Ryan Blue. Center for Disease Control and Prevention. Updated May 29, 2019. Accessed August 31, 2023. Available at www.cdc.gov/dpdx/microsporidiosis/index.html

Performance

Method Description

Specimen concentrates are stained by the trichrome-blue method.(DeGirolami PC, Ezratty CR, Desai G, et al. Diagnosis of intestinal microsporidiosis by examination of stool and duodenal aspirate with Weber's modified trichrome and Uvitex

2B stains. J Clin Microbiol. 1995;33:805-810)

PDF Report
No

Day(s) Performed
Monday through Friday

Report Available
2 to 4 days

Specimen Retention Time
7 days

Performing Laboratory Location
Mayo Clinic Laboratories - Rochester Main Campus

Fees & Codes

Fees
- Authorized users can sign in to Test Prices for detailed fee information.
- Clients without access to Test Prices can contact Customer Service 24 hours a day, seven days a week.
- Prospective clients should contact their account representative. For assistance, contact Customer Service.

Test Classification
This test has been cleared, approved, or is exempt by the US Food and Drug Administration and is used per manufacturer's instructions. Performance characteristics were verified by Mayo Clinic in a manner consistent with CLIA requirements.

CPT Code Information
87015-Concentration
87207-Stain

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
MTBS	Microsporidia Stain	10857-1

Result ID	Test Result Name	Result LOINC® Value
MTBS	Microsporidia Stain	10857-1