Test Definition: HSTQU

Histoplasma Ag, Quant EIA, U

Overview

Useful For

Aiding in the diagnosis of *Histoplasma capsulatum* infection

Monitoring *Histoplasma* antigen levels in urine

Highlights

Alongside other routine methods including culture, molecular testing, and serology, this test aids in the diagnosis of infection with *Histoplasma capsulatum*.

Method Name

Enzyme Immunoassay (EIA)

NY State Available

Yes

Specimen

Specimen Type

Urine

Specimen Required

Supplies: Aliquot tube, 5 mL (T465)

Container/Tube: Plastic vial

Specimen Volume: 4 mL

Collection Instructions:

1. Collect a random urine specimen.

2. No preservative.

3. **Do not centrifuge** to remove particulates.

Specimen Minimum Volume

2.5 mL

Reject Due To

Gross hemolysis	Reject
Turbid Colored	Reject

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Urine	Refrigerated (preferred)	14 days	
	Frozen	31 days	
	Ambient	72 hours	

Clinical and Interpretive

Clinical Information

Histoplasma capsulatum is a dimorphic fungus endemic to the Midwestern United States, particularly along the Mississippi River and Ohio River valleys. Infection occurs following inhalation of fungal microconidia, and subsequent clinical manifestations are largely dependent on the fungal burden at the time of exposure and the patient's underlying immune status. While the vast majority (>90%) of exposed individuals will remain asymptomatic, individuals seeking medical attention can present with a diverse set of symptoms ranging from a self-limited pulmonary illness to severe, disseminated disease. Individuals at risk for severe infection include those with impaired cellular immunity, who have undergone organ transplantation, who are HIV positive, or who have a hematologic malignancy.

The available laboratory methods for the diagnosis of *H capsulatum* infection include fungal culture, molecular techniques, serologic testing, and antigen detection. While culture remains the gold standard diagnostic test and is highly specific, prolonged incubation is often required, and sensitivity decreases (9%-34%) in cases of acute or localized disease. Similarly, molecular methods offer high specificity but decreased sensitivity. Serologic testing likewise offers high specificity; however, results may be falsely negative in immunosuppressed patients or those who present with acute disease. Also, antibodies may persist for years following disease resolution, thereby limiting the clinical specificity.

Detection of *H capsulatum* antigen from urine samples has improved sensitivity (80%-95%) for the diagnosis of active histoplasmosis compared to both culture and serology. Additionally, urine antigen levels can be followed to monitor patient response to therapy, with declining levels consistent with disease resolution. Notably, however, *H capsulatum* antigen may persist at low levels following completion of antifungal therapy and clinical improvement.

Reference Values

HISTOPLASMA ANTIGEN RESULT:

Not Detected

HISTOPLASMA ANTIGEN VALUE

Not Detected

Detected: <0.2 ng/mL

Detected: 0.2-25.0 ng/mL

Detected: >25.0 ng/mL

Interpretation

Not Detected: No Histoplasma antigen detected. False-negative results may occur. Repeat testing on a new specimen should be considered if clinically indicated.

Detected, <0.2 ng/mL: Histoplasma antigen detected below the limit of quantification (<0.2 ng/mL). Results should be correlated with clinical presentation, exposure history and other diagnostic procedures, including culture, serology, histopathology, and radiographic findings. False-positive results may occur in patients with other fungal infections, including *Blastomyces*.

Detected: Histoplasma antigen detected. The reportable range of this assay is 0.2 to 25.0 ng/mL. Results should be correlated with clinical presentation, exposure history, and other diagnostic procedures, including culture, serology, histopathology, and radiographic findings. False-positive results may occur in patients with other fungal infections, including *Blastomyces*.

Detected, >25 ng/mL: Histoplasma antigen detected above the limit of quantification (>25.0 ng/mL). Results should be correlated with clinical presentation, exposure history, and other diagnostic procedures, including culture, serology, histopathology, and radiographic findings. False-positive results may occur in patients with other fungal infections, including Blastomyces.

Cautions

Cross-reactivity with other fungal infections, including *Blastomyces dermatitidis*, may occur. Positive results should be correlated with other clinical and laboratory findings (eg, culture, serology).

Low-level positive titers may persist following resolution of infection and completion of appropriate treatment regimen.

Turbid urine specimens, containing excess protein, cells, or particulate matter, can inhibit the function of the test.

Clinical Reference

1. Theel ES, Harring JA, Dababneh AS, Rollins LO, Bestrom JE, Jespersen DJ: Reevaluation of commercial reagents for detection of *Histoplasma capsulatum* antigen in urine. J Clin Micrbiol. 2015 Apr;53(4):1198-1203. doi: 10.1128/JCM.03175-14

2. Wheat LJ, Freifeld AG, Kleiman MB, et al: Clinical practice guidelines for the management of patients with histoplasmosis: 2007 update by the Infectious Diseases Society of America. Clin Infect Dis. 2007 Oct 1;45(7):807-825

Performance

Method Description

The IMMY Clarus Histoplasma GM Enzyme Immunoassay (EIA) is an immunoenzymatic, sandwich microplate assay which detects *Histoplasma* galactomannan in urine. Galactomannan is a polysaccharide found in the cell wall. Monoclonal anti-*Histoplasma* IgG antibodies bound to microwell plates are used as capture antibodies. Horseradish peroxidase (HRP) conjugated anti-*Histoplasma* monoclonal IgG antibodies are used as detection reagents. Urine specimens are run untreated. The samples are added to the microwells coated with the capture antibodies and incubated.

If the patient specimen contains *Histoplasma* galactomannan, those antigens will become bound to the capture antibodies on the microwells. After incubation, the microwells are washed to remove unbound patient material. HRP detection antibodies are added to the microwells. After a second incubation, the microwells are washed to remove any unbound HRP detection antibodies. If antigen is present in the patient sample, a blue color develops with the addition of 3,3â€™,5,5â€™ tetramethylbenzidine (TMB). The reaction is stopped by the addition of a stop solution, where a yellow color develops. The optical density (absorbance) is checked with a microplate reader at 450 nm and a reference wavelength of 620/630 nm.(Package insert: Clarus Histoplasma GM Enzyme Immunoassay. IMMY; Rev. 0 05/08/2019)

PDF Report

No

Day(s) Performed

Monday through Sunday

Report Available

Same day/1 to 3 days

Specimen Retention Time

14 days

Performing Laboratory Location

Rochester

Fees and 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 Regional Manager. For assistance, contact Customer Service.

Test Classification

This test has been modified from the manufacturer's instructions. Its performance characteristics were determined by Mayo Clinic in a manner consistent with CLIA requirements. This test has not been cleared or approved by the US Food and Drug Administration.

CPT Code Information

87385

LOINC® Information

Test ID	Test Order Name	Order LOINC Value
HSTQU	Histoplasma Ag, Quant EIA, U	48952-6

Result ID	Test Result Name	Result LOINC Value
HISTF	Histoplasma Ag Result	44524-7
DEXUH	Histoplasma Ag Value	48952-6