



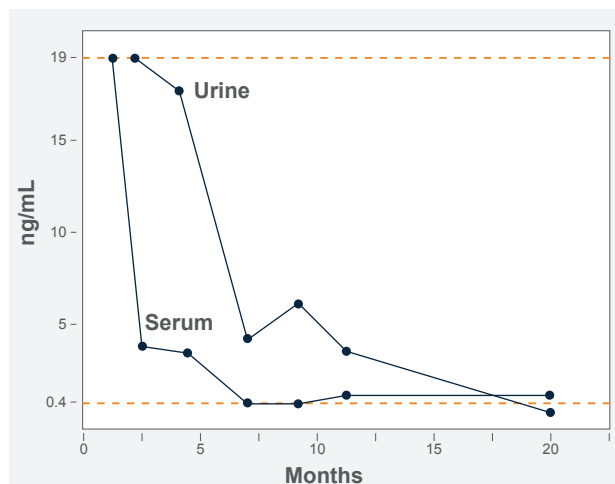
## CLINICAL DIAGNOSIS

# What Tests Should Be Performed for Diagnosing Histoplasmosis?

Drew Hanzlicek, DVM, MS, DACVIM (SAIM); Joe Wheat, MD; Heather Largura, DDS, MS

**Diagnosis.** Most clinicians only order antigen on urine specimens and do not recognize the value of testing serum specimens. The antigen may be negative in one specimen type but positive in the other. Without testing for both you may miss the diagnosis. Analysis of the results obtained in 183 veterinary patients in whom both urine and serum were tested between 2014 and 2020 and at least one was positive are presented in the table: 3% of cases may have been missed if only urine was tested.

	Urine positive	Urine negative
Serum positive	72%	3%
Serum negative	26%	Not determined



## Monitoring Treatment

Antigen detection using the MiraVista quantitative EIA has been validated for monitoring response to treatment [1-3]. Antigen is quantified by extrapolation from a standard curve containing standards ranging from 0.4 ng/mL to 19 ng/mL. Results above the highest standard are classified as above the limit of quantification (ALQ). The reason for not providing the ng/mL concentration is that the standard curve is no longer linear above the highest standard. The drawback of an ALQ result is that response cannot be monitored by antigen clearance if the ALQ result persists (Figure). Monitoring the serum usually permits quantification when the urine is ALQ.

## We Recommend

1. Send both urine and serum for diagnosis of histoplasmosis
2. Test urine for antigen
3. If the urine antigen is negative but histoplasmosis is still suspect, test the serum for *Histoplasma* IgG antibody, *Histoplasma* FID antibody and *Histoplasma* antigen
4. If the urine is ALQ continue test the serum for antigen and follow the serum antigen until it is negative or weakly positive (less than 2 ng/mL), then resume testing the urine for antigen

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4705 Decatur Blvd. | Indianapolis, Indiana 46241, USA

888-841-8387



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5. Monitor antigen:
  - a. 3-month intervals during treatment
  - b. 6 and 12 months after stopping treatment
  - c. If the clinical or imaging findings suggest progression or relapse
6. Criteria for stopping treatment:
  - a. Clinical findings have resolved
  - b. Imaging abnormalities have resolved or improved significantly on repeat testing
  - c. Antigen in urine and serum is negative (obtain consultation if remaining weakly positive after 12 months of treatment)

### REFERENCES:

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2. Hage CA, Kirsch EJ, Stump TE, et al. *Histoplasma Antigen Clearance during Treatment of Histoplasmosis in Patients with AIDS Determined by a Quantitative Antigen Enzyme Immunoassay*. Clin Vaccine Immunol **2011 Apr**; 18(4):661-6.
3. Hanzlicek AS, Meinkoth JH, Renschler JS, Goad C, Wheat LJ. *Antigen Concentrations as an Indicator of Clinical Remission and Disease Relapse in Cats with Histoplasmosis*. J Vet Intern Med **2016 Jul**; 30(4):1065-73.

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