



## CLINICAL DIAGNOSIS

# Antibody Testing for *Histoplasma* and *Blastomyces* – What, When & Where?

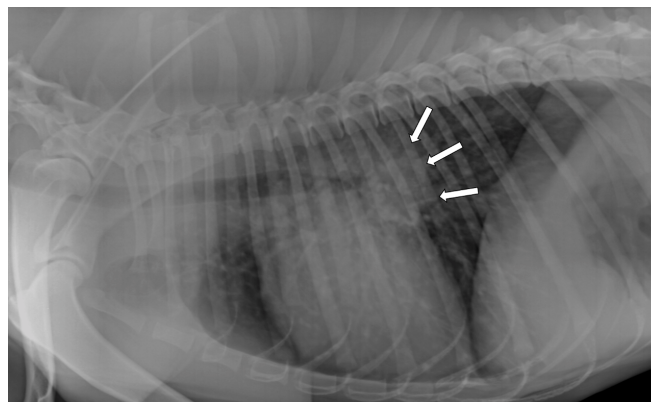
### At a Glance – Key Points

1. The MVista® *Histoplasma* and *Blastomyces* Antigen EIA tests are highly sensitive
2. There is high cross-reactivity between *Histoplasma* and *Blastomyces* antigen
3. Urine and serum antigen testing are negative in approximately 5% of cases
4. MVista® *Histoplasma* and *Blastomyces* IgG Antibody EIA tests are indicated if antigen testing is negative and clinical suspicion remains
5. The MVista® *Histoplasma* and *Blastomyces* IgG Antibody EIA tests can help differentiate between histoplasmosis and blastomycosis

Histoplasmosis was considered most likely due to it being the most common systemic mycosis in Kansas. Urine and serum were negative for antigen by the MVista® *Histoplasma* Antigen Quantitative EIA (test code 310). Due to continued high suspicion for fungal pneumonia, serum was submitted for *Histoplasma* antibody testing by the MVista® *Histoplasma* Canine IgG Antibody EIA (test code 327) and *Coccidioides* antibody testing by MVista® *Coccidioides* Canine IgG Antibody EIA (test code 329). Anti-*Coccidioides* IgG antibody concentrations were low (14 EU; Reference Interval <8) while anti-*Histoplasma* IgG antibody concentrations were at high (>80 EU; Reference interval <8). A small amount of cross-reactivity is expected between the 2 organisms and the significantly higher concentration of anti-*Histoplasma* antibodies is indicative of histoplasmosis.

### Case Example

Casey, a 2-year-old, male Labrador retriever was presented for a dry cough and lethargy of a couple weeks duration. Casey lives in southern Kansas on acreage. He has not travelled outside of the state. Physical examination revealed a fever 104.0F and adventitial lung sounds- wheezes. Casey was tachypneic at rest (45 breaths / minute). Routine lab work was unremarkable. Chest radiographs revealed a diffused mostly unstructured interstitial pattern and large tracheobronchial lymph nodes. Based on the full clinical picture, fungal pneumonia was suspected.



**Figure 1:** Lateral thoracic radiograph showing a diffuse mostly unstructured interstitial pattern and tracheobronchial lymphadenopathy.

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### Discussion

**MVista® IgG antibody testing should be considered when antigen testing is negative, and suspicion remains.**

Casey's case is a good example of when to test for anti-*Histoplasma* antibodies. When urine is tested for antigen with the MVista® *Histo* Antigen EIA it is highly sensitive (89% dog and 94% cat) for histoplasmosis [1-4]. Likewise the MVista® *Blasto* Antigen EIA is highly sensitive (94% dog) for blastomycosis [5]. Urine and serum antigen testing are both negative in approximately 5±2% of cases. This is more common in localized histoplasmosis or blastomycosis, which might include disease localized to the eye, GI tract, skin, bone, and joint. Possibly due to lower fungal burden, some animals with pulmonary or disseminated infection can have negative antigen testing. In Casey, the infection was apparently localized to the lung. In humans, the addition of antibody testing to antigen testing for pulmonary histoplasmosis increases the sensitivity from 87.5% to 96.3% [6]. Thus, testing for both is recommended in cases of suspected pulmonary histoplasmosis. Like Casey, clinical experience suggests the same is true for dogs and cats.

MiraVista Diagnostics offers antibody testing by immunodiffusion (ID) and by enzyme immunoassay (EIA). The antibody EIA tests were developed by, and are only available from, MiraVista Diagnostics. The MVista® *Blastomyces* IgG Antibody EIA has been shown to be far superior to *Blastomyces* antibody ID testing in dogs [7]. Sensitivity for the MVista® *Blastomyces* IgG Antibody EIA is 95% as compared with 65% for the antibody ID test [7]. Rigorous investigation comparing the diagnostic performance of the MVista® *Histoplasma* IgG Antibody EIA with the antibody ID test is ongoing.

**MVista® IgG antibody testing can help differentiate between different endemic mycoses**

Like Casey, the antibody EIA tests can help differentiate between different endemic mycoses that potentially cross-react with antigen testing. This would be most common between *Histoplasma* and *Blastomyces*, but lesser cross-reactivity does occur between *Coccidioides* and *Histoplasma*. As in Casey's case, with minimal cross-reactivity, the antibody concentration is highest for the infecting organism-*Histoplasma*. In contrast to antibody EIA testing the *Histoplasma* and *Blastomyces* Antigen EIA tests are highly cross-reactive, precluding the need to test for both antigens in the same patient.

### REFERENCES:

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