



CLINICAL DIAGNOSIS

What If the Antigen Test Is Negative?

Publications suggest the sensitivity for *Histoplasma* or *Blastomyces* antigen in urine approaches 100% but the results of clinical testing indicate negative results occur perhaps in 5-10% of cases. The causes for false negative results include limited fungal burden which occurs in cases with focal lung lesions, skin lesions, ocular lesions, etc. Negative results may also occur in the first few weeks following onset of symptoms.

ANSWER: I recommend sending urine and serum with instructions to test the urine for either *Histoplasma* or *Blastomyces* antigen (Primary tests). There is no need to test for both *Histoplasma* and *Blastomyces* antigen since they are cross-reactive. If the primary tests are negative,

perform the secondary tests, which may help with diagnosis. If the illness has been present for a month or less submit a convalescent specimen, which may have become positive with progressive infection. If the antigen and antibody tests are negative diagnosis may be established by cytopathology or histopathology of lesions or body fluids.

Recommendations Based on Suspected Diagnosis

Mycosis	Primary (most sensitive)	Secondary (may be positive if primary tests negative)
Blastomycosis [1, 2]	<i>Blastomyces</i> urine antigen (code 316)	<i>Blastomyces</i> IgG antibody-canine (code 330) <i>Blastomyces</i> FID antibody-feline (code 328) [feline IgG not available]
Histoplasmosis [3, 4]	<i>Histoplasma</i> urine antigen (code 310)	<i>Histoplasma</i> IgG antibody (code 327) <i>Histoplasma</i> FID antibody (code 321) <i>Histoplasma</i> serum antigen (test code 310)
Coccidioidomycosis [5, 6]	<i>Coccidioides</i> IgG antibody (code 329) <i>Coccidioides</i> FID antibody (code 320)	<i>Coccidioides</i> serum and urine antigen (code 315)
Cryptococcosis [7]	<i>Cryptococcal</i> serum antigen (code 319)	None
Aspergillosis-sinonasal [8, 9]	<i>Aspergillus</i> FID antibody (code 324)	<i>Aspergillus</i> serum and urine antigen (code 309)
Aspergillosis-systemic [10]	<i>Aspergillus</i> serum and urine antigen (code 309)	<i>Aspergillus</i> urine antigen (code 309) <i>Aspergillus</i> FID antibody (code 324)

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Sensitivity and Specificity MiraVista Tests

Test	Specimen	Sensitivity	Specificity	Reference
<i>Blastomyces</i> antigen	Urine (dog) Serum (cat)	100% 100%	95% 100%	[1]
<i>Blastomyces</i> IgG antibody EIA	Serum (dog)	95%	95%	[1]
<i>Blastomyces</i> ID antibody	Serum (dog)	65%	100%	[1]
<i>Blastomyces</i> ID antibody	Serum (dog)	18%	Not done	[11]
<i>Histoplasma</i> antigen	Urine (dog)	89%	100%	[4]
<i>Histoplasma</i> antigen	Urine (cat)	94%	100%	[12]
<i>Histoplasma</i> IgG antibody EIA	Serum (dog)	78%	97%	MVD
<i>Histoplasma</i> IgG antibody EIA	Serum (cat)	78%	84%	MVD
<i>Histoplasma</i> ID antibody	Serum (human)	88%	99%	[13]
<i>Coccidioides</i> antigen	Serum (dog)	30%	97%	[6]
<i>Coccidioides</i> antigen	Urine (dog)	12%		
<i>Coccidioides</i> IgG antibody EIA	Serum (dog)	89%	94%	[6]
<i>Coccidioides</i> ID antibody	Serum (dog)	92%	92%	
Combined IgG and ID antibodies	Serum (dog)	99%		
<i>Cryptococcal</i> antigen (CALAS)	Serum (cat) Serum (dog)	96% 83%	97-100%	[14-16]
<i>Aspergillus</i> antigen-systemic aspergillosis	Serum (dog) Urine (dog)	92% 88%	86% 92%	[10]
<i>Aspergillus</i> antigen-sinonasal aspergillosis	Serum (dog)	24%	76%	[8]
<i>Aspergillus</i> antibody ID-sinonasal aspergillosis	Serum (dog)	76%	100%	[8]
Fungitell beta-D-glucan	Serum (dog)	100%	72%	MVD

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