

More information on the clinical performance of the SNAP® Lepto Test is now available

IDEXX, as a leader in pet health-care innovation, developed an enzyme-linked immunosorbent assay (ELISA) for *Leptospira*-specific antibodies that can be performed as a point-of-care SNAP® test or as an IDEXX Reference Laboratories test. The SNAP® Lepto Test and the Canine *Leptospira* spp. Antibody by ELISA provide fast results at a low cost to assist veterinarians in diagnosing this potentially life-threatening infection. Summaries of two new papers based on research sponsored by IDEXX and published in the (peer-reviewed) *International Journal of Applied Research in Veterinary Medicine* on the performance of the ELISA for *Leptospira*-specific antibodies are provided below.

Performance of a recombinant LipL32-based rapid in-clinic ELISA (SNAP Lepto) for the detection of antibodies against *Leptospira* in dogs¹

A broad population of canine samples was tested to evaluate the overall agreement of the SNAP Lepto Test with the microscopic agglutination test (MAT).

Purpose

The purpose of this study was to compare the LipL32-based SNAP Lepto Test to the MAT for detection of anti-*Leptospira* spp. antibodies.

Study design

The canine serum samples included in this study were: 460 samples submitted for MAT testing, 150 MAT-negative samples from healthy dogs residing in Alaska, 52 samples positive for anti-*Borrelia burgdorferi* antibodies, and samples from 28 dogs following *Leptospira* vaccination.

Results

Agreement of the SNAP Lepto Test in a population of MAT-positive samples increased with increasing peak MAT titers, with an agreement of 92.2% with peak titers \geq 3200 (see table 1). Agreement of the SNAP Lepto Test with MAT-negative samples was 96% with samples from healthy dogs in Alaska. Fifty-one of the 52 Lyme-positive samples (98.1%) tested negative on the SNAP Lepto Test. All 52 samples were MAT negative for all six serogroups tested. The one dog positive on the SNAP Lepto Test may have been previously vaccinated or had prior exposure. As noted in table 2, both the SNAP Lepto Test and the MAT detected antibodies induced by *Leptospira* vaccination.

Peak MAT titer	Number of samples	Number of SNAP Lepto Test positive	Percent SNAP Lepto Test positive
100	8	5	62.5%
200	20	11	55.0%
400	29	21	72.4%
800	53	37	69.8%
1600	34	25	73.5%
3200	13	10	76.9%
6400	19	16	84.2%
12800	32	29	90.6%
25600	14	14	100.0%
51200	18	18	100.0%
102400	19	19	100.0%
Total	259	205	79.2%

Table 1. SNAP Lepto Test performance with MAT-positive samples by peak titer

Time post vaccination	MAT positive	SNAP Lepto Test positive
Week 3	27/28 (peak of 1:3200)	15/28
Week 4	28/28 (peak of 1:6400)	22/28
1 year	3/21 (peak of 1:200)	5/21

Table 2. SNAP Lepto Test and MAT results for vaccinated dogs

Evaluation of SNAP Lepto in the diagnosis of leptospirosis infections in dogs: Twenty-two clinical cases²

Dogs presenting to veterinary referral hospitals for evaluation by board-certified veterinary internists were enrolled in the study after leptospirosis was considered a differential diagnosis.

Purpose

The purpose of this study was to evaluate the correlation between *Leptospira* species antibody detection using the SNAP® Lepto Test and the microscopic agglutination test (MAT) in dogs with a clinical diagnosis of leptospirosis.

Study design

A total of 162 serum samples from dogs with a differential diagnosis of leptospirosis were evaluated with the MAT and the SNAP Lepto Test. Criteria used for determining a confirmed case of leptospirosis is summarized in table 3 with only 4 dogs having *Leptospira* spp. RealPCR™ Test results available.

Criteria for diagnosis	Number of confirmed leptospirosis cases	Number testing positive on SNAP Lepto Test
<i>Leptospira</i> spp. RealPCR Test positive only (MAT negative)	4	1*
MAT \geq 1:800 on initial testing with no history of <i>Leptospira</i> vaccination	8	7
MAT titer of \geq 1:3200 on initial testing with a previous history of <i>Leptospira</i> vaccination or an unknown vaccination history	4	4
4-fold increase in MAT titer between acute and convalescent samples	6	6

*Only known *Leptospira* vaccinee in this confirmed leptospirosis category

Table 3. Criteria used to classify the clinical canine population having a differential diagnosis of leptospirosis

Conclusion

The diagnosis of canine leptospirosis can be complicated and challenging. As noted in these studies, the new SNAP Lepto Test and the Canine *Leptospira* spp. Antibody by ELISA provide valuable information when performing this complex diagnostic workup. Rapid, accurate results at a low cost permit more frequent testing and facilitate convalescent testing by in-clinic SNAP® test or reference laboratory ELISA when needed. For the most complete diagnostic workup, it is important to consider both serology and PCR when a patient presents with clinical signs consistent with leptospirosis. IDEXX is excited to provide the most comprehensive *Leptospira* testing options with the in-clinic SNAP test and reference laboratory ELISA and RealPCR testing.

Expert feedback when you need it

Our team of internal medicine specialists is always available for complimentary consultation. Please call **1-888-433-9987**.

For more information

To learn more about using the in-clinic SNAP Lepto Test and the Canine *Leptospira* spp. Antibody by ELISA offered at IDEXX Reference Laboratories, visit **idexx.com**.

Results

See table 3 for a results summary. The top three most common presenting clinical signs in the confirmed leptospirosis cases were lethargy, anorexia, and vomiting, indicating the need to consider leptospirosis in dogs with these common clinical signs. The PCR-positive dogs in the first category were likely in the acute phases of the infection, highlighting the utility of PCR testing during this stage. In the last category 6/22 dogs had a 4-fold increase in MAT titer between acute and convalescent samples. Of these dogs, 2/6 were SNAP Lepto Test negative on initial presentation and all six were positive on convalescent testing, highlighting the importance and ease of convalescent serologic testing with the SNAP Lepto Test in a patient suspected of having leptospirosis.

CE-approved courses are available

Short videos and courses about canine leptospirosis are available at **idexxlearningcenter.idexx.com**.

References

1. Curtis KM, Foster PC, Smith PS, et al. Performance of a recombinant LipL32-based rapid in-clinic ELISA (SNAP Lepto) for the detection of antibodies against *Leptospira* in dogs. *Intern J Appl Res Vet Med*. 2015;13(3):182–189. jarvm.com/articles/Vol13Iss3/Vol13%20Iss3Curtis.pdf. Accessed February 6, 2017.
2. Winzelberg S, Tasse SM, Goldstein RE, et al. Evaluation of SNAP Lepto in the diagnosis of leptospirosis infections in dogs: twenty-two clinical cases. *Intern J Appl Res Vet Med*. 2015;13(3):193–198. jarvm.com/articles/Vol13Iss3/Vol13%20Iss3Tasse.pdf. Accessed February 6, 2017.

The information contained herein is intended to provide general guidance only. As with any diagnosis or treatment, you should use clinical discretion with each patient based on a complete evaluation of the patient, including history, physical presentation, and complete laboratory data. With respect to any drug therapy or monitoring program, you should refer to product inserts for a complete description of dosages, indications, interactions, and cautions.