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MICROSCOPIC AND MOLECULAR DETECTION OF *AELUROSTRONGYLUS ABSTRUSUS* IN NATURALLY INFECTED CATS

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INTRODUCTION: *Aelurostrongylus abstrusus*, the feline lungworm, is distributed worldwide and infects bronchioles, alveolar ducts, and alveoli of domestic cats. Feline aelurostrongylosis can vary from subclinical to life-threatening disease. The detection of L1 using the Baermann method is the gold standard for diagnosis, however some molecular assays have demonstrated better diagnostic performance than copromicroscopy. This study evaluated the diagnostic utility of a species-specific, PCR protocol for *A. abstrusus* using different biological samples collected from cats living in various endemic regions.

MATERIALS AND METHODS: One hundred privately-owned cats from Italy (no. 60) and Greece (no. 40) were included in the study. Individual fecal samples were obtained and, for cats from Italy, a pharyngeal swab as well. Fecal samples were examined using flotation and Baermann. Based on the copromicroscopic results, cats were enrolled to create three groups, i.e. Group A (no. 50 cats with *A. abstrusus* infection regardless of positivity for other helminths), Group B (no. 25 cats negative for *A. abstrusus* but positive for at least any other helminth, including other lungworms), Group C (no. 25 cats negative for any helminth). DNA extracts from individual aliquots of feces, flotation supernatant, Baermann's sediment and pharyngeal swabs were subjected to an *A. abstrusus*-specific PCR (Traversa et al., 2008. Parasitol Res, 103: 1191-16). The PCR results were compared with those obtained using Baermann method to determine the sensitivity and specificity, as follows:

Sensitivity: no. cats positive by PCR for *A. abstrusus* / no. cats positive by copromicroscopy for *A. abstrusus*.

Specificity: no. cats negative by PCR for *A. abstrusus* / no. cats negative by copromicroscopy for *A. abstrusus*.

RESULTS AND CONCLUSIONS: Cats infected with *A. abstrusus* in Group A scored either negative (no. 30) or positive (no. 20), with varying percentages, for other helminthes. Cats in Group B were positive for different species of intestinal and and respiratory helminths. At least one fecal aliquot or the pharyngeal swab scored positive by PCR in 48/50 (96%) cats enrolled in Group A. All samples from Groups B and C were PCR-negative, except for 6. The overall sensitivity and specificity of the PCR assay here used were 96% (48/50) and 94% (44/50), respectively. Detailed PCR results are shown in Table 1. These results confirm the high sensitivity and specificity of the PCR and demonstrate that the pharyngeal swab is the most suitable and practical sample for PCR in clinical settings. The use of the species-specific PCR herein investigated may have crucial clinical implications, as it allows detection of *A. abstrusus* DNA in occult/pre-patent infections, as well as in the presence of mixed infections with other endoparasites.

TABLE 1. Overall positivity in a nested PCR species-specific for *Aelurostrongylus abstrusus* of different fecal aliquots and pharyngeal swab collected from cats of the present study.

Group	PCR feces n/tot (%; 95% CI)	PCR flotation n/tot (%; 95% CI)	PCR Baermann n/tot (%; 95% CI)	PCR pharyngeal swab n/tot (%; 95% CI)	Total PCR n/tot (%; 95% CI)
Italy					
A	16/25 (64; 42.5-82)	15/25 (60; 38.7-78.9)	21/25 (84; 63.9-95.5)	21/25 (84; 63.9-95.5)	24/25 (96; 79.7-99.9)
B	0/15 (0)	1/15 (6.7; 0.2-32)	2/15 (13.3; 1.7-40.5)	0/15 (0)	2/15 (13.3; 1.7-40.5)
C	0/20 (0)	0/20 (0)	0/20 (0)	2/20 (10; 1.2-31.7)	2/20 (10; 1.2-31.7)
Greece					
A	22/25 (88; 68.8-97.5)	18/25 (72; 50.6-87.9)	20/25 (80; 59.3-93.2)	NA	24/25 (96; 79.7-99.9)
B	1/10 (10; 0.3-44.5)	1/10 (10; 0.3-44.5)	2/10 (20; 2.5-55.6)	NA	2/10 (20; 2.5-55.6)
C	0/5 (0)	0/5 (0)	0/5 (0)	NA	0/5 (0)
Total					
A	38/50 (76; 61.8-86.94)	35/50 (70; 55.4-82.1)	41/50 (82; 68.6-91.4)	21/25 (84; 63.9-95.5)	48/50 (96; 86.3-99.5)
B	1/25 (4; 0.1-20.4)	2/25 (8; 1-26)	4/25 (16; 4.5-36.1)	0/15 (0)	4/25 (16; 4.5-36.1)
C	0/25 (0)	0/25 (0)	0/25 (0)	2/20 (10; 1.2-31.7)	2/25 (8; 1-26)

n: number of positive cats; tot: number of examined cats; CI: confidence interval; NA: not applicable, pharyngeal swabs collected only for cats enrolled in Italy.