

Parasitic and Vector-Borne Pathogens in Stray Cat Colonies: Fecal and Environmental Vector Survey in a One Health Context

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Objectives: Increasing urbanization and the expansion of stray cat colonies in Portugal raise public health and animal welfare concerns, as these colonies may serve as reservoirs for intestinal and pulmonary parasites and ectoparasites acting as vectors of zoonotic pathogens. Given the lack of national epidemiological studies, we assessed environmental contamination in stray cat colonies from various Portuguese municipalities by screening for intestinal and pulmonary parasites and for vector-borne pathogens carried by ectoparasites.

Material and Methods: Between September and December 2024, fecal samples and ectoparasites (fleas and ticks) were randomly collected from the environment near stray cat colonies, during trap-neuter-return campaigns, in the municipalities of Benavente, Foz Côa, Sintra, Amadora, Alcácer do Sal, and Régua. Coprological analysis was performed using the Willis flotation method, the sedimentation technique, and the Baermann method to detect gastrointestinal and pulmonary parasites. Ectoparasites underwent DNA extraction followed by PCR to detect DNA of *Anaplasma/Ehrlichia* spp., *Bartonella* spp., *Borrelia* spp., and *Rickettsia* spp.

Results: A total of 105 fecal samples, 25 fleas (all *Ctenocephalides felis*) and 17 ticks (15 *Ixodes ricinus* and 2 *Rhipicephalus sanguineus*) were collected. Gastrointestinal and/or pulmonary parasites were detected in 89.5% (89/105) of the faecal samples. The most prevalent was *Toxocara cati* (55.2%), followed by Ancylostomidae (31.4%), *Cystoisospora* spp. (23.8%), *Aelurostrongylus abstrusus* (11.4%), and Taeniidae (7.6%). *Dipylidium caninum* was identified in 5.7% of samples, *Trichostrongylus axei* in 4.8%, and both *Capillaria aerophila* and *Giardia duodenalis* in 1.9%. Parasitic coinfections were observed in 44.8% of the samples. In the molecular screening of ectoparasites, 88% (22/25) of fleas tested positive for *Bartonella* spp., and 28% (7/25) for *Rickettsia* spp. Among ticks specimens, 6% (1/17) tested positive for *Borrelia* spp. and *Anaplasma/Ehrlichia* spp., while *Rickettsia* spp. was not detected.

Conclusions: These findings highlight the high prevalence of parasites with zoonotic potential in stray cat colonies across several Portuguese municipalities, underscore the potential public health risks associated with environmental contamination in urban areas and reinforce the need for integrated surveillance and control measures within a One Health framework.

Keywords: Vector-borne pathogens; stray cat colonies; gastrointestinal parasites; pulmonary parasites, one health

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