Prevalence and risk factors for *Mycoplasma* spp. positivity in cat blood donor units from Portugal, Spain and Belgium in 2022: Retrospective study on 7573 blood donations from 4121 healthy donor cats

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Introduction

Hemotropic mycoplasmas, also called hemoplasmas, are epi-erythrocytic wall-less gram-negative bacteria that can be transmitted through red blood cells transfusions with possible clinical consequences (Figure 1). Prevalence for hemoplasma infection varies geographically among *Hemoplasma* species. Male gender, adult age, non-pedigree breed, outdoor access, and co-infection with retroviruses (feline immunodeficiency virus (FIV) and/or feline leukemia virus (FeLV)) have been associated with *Hemoplasma* spp. positivity.

Objectives: (1) to assess the prevalence of hemoplasmas in privately-owned feline blood donors from Portugal, Spain and Belgium that donated blood in 2022, and (2) to investigate the association between *Hemoplasma* spp. qPCR positivity in feline blood donor units and selected clinico-epidemiological parameters.

Materials

Medical information on all feline blood donations performed in 2022 were retrospectively collected from the BSA - Animal blood bank medical records database.

The study sample consisted of privately-owned healthy cats that donated blood in 2022.

Statistical methods

For prevalence estimation, a cat was considered positive for hemoplasmas is at least one of its blood units tested positive during the study period. Prevalence was calculated using extract 95% confidence intervals (95% CI) for binomial proportions.

Univariable and multivariable generalized estimation equation (GEE) models were used to analyze the association between *Hemoplasma* spp. qPCR positivity in blood units and the following parameters:

- Age
- Gender
- Breed (pedigree or non-pedigree breed)
- Blood type
- Co-infection with FeLV or FIV
- Portuguese region
- Seasonality of blood donation

Figure 1: Mycoplasma hemofelis, rod-shaped bacteria seen on red blood cells. *Copyright: eClinpath Website*

(1) Prevalence results

A total of 7573 blood donations from 4121 privately-owned feline donors were studied. Most cats donated blood once (n=1996, 48.4%); the remainder donated twice (n=1099, 26.7%), three (n=725, 17.6%) or four (n=301, 7.3%) times in 2022.

Hemoplasma prevalence per country was:

Country	Positive cats (n)	Estimated prevalence (%)	95% CI
Portugal (N=4034)	212	5.3	4.6 – 5.9
Spain (N=70)	2	2.9	0.0 – 6.8
Belgium (N=17)	0	NA	NA

Among *Hemoplasma* spp. positive Portuguese cats, 30 cats donated blood >1 time in 2022:
- 26 cats were negative first then positive
- 3 cats were positive on two occasions
- 1 cat was positive first then negative

(2) *Hemoplasma* spp. association results

Hemoplasma spp. qPCR positivity in blood donor units was significantly associated with the following parameters:

Variables	Adjusted OR	95% CI	*P*-value
Male gender	1.9	1.4 – 2.6	< 0.0001
FeLV +	2.9	1.5 – 5.7	0.0018
Winter season	2.5	1.7 – 3.6	< 0.0001

Conclusions

- European feline blood donors displayed a low prevalence for hemoplasmas.

- *Hemoplasma* spp. qPCR positivity in blood units was significantly associated with male gender, FeLV co-infection and winter season.

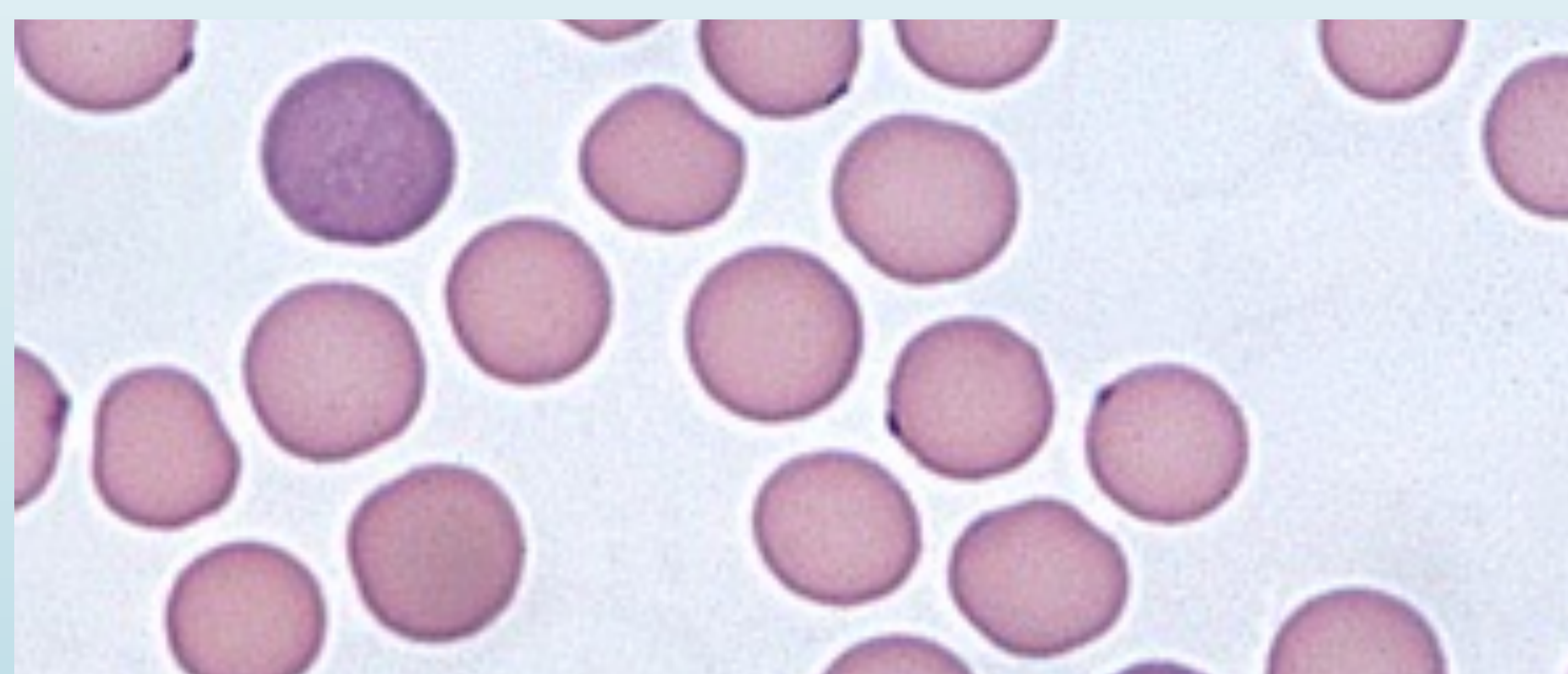- Screening for blood-borne pathogens on every donation, instead of annually, is advised.