ANTEMORTEM DIAGNOSIS OF CAPRINE PARATUBERCULOSIS BY FAECAL PCR IN RELATION TO HISTOPATHOLOGICAL LESIONS

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Paratuberculosis (PTB) is a widely distributed disease caused by *Mycobacterium avium subsp. paratuberculosis* (Map). The antemortem diagnosis of Map-excreting animals is necessary to control PTB, especially in ruminants, hence a reliable PCR protocol for faeces would be useful.

OBJECTIVE

Determine the PTB prevalence in discarded goats and analyze the association between faecal-PCR and histopathological lesions.

MATERIALS AND METHODS

Necropsy

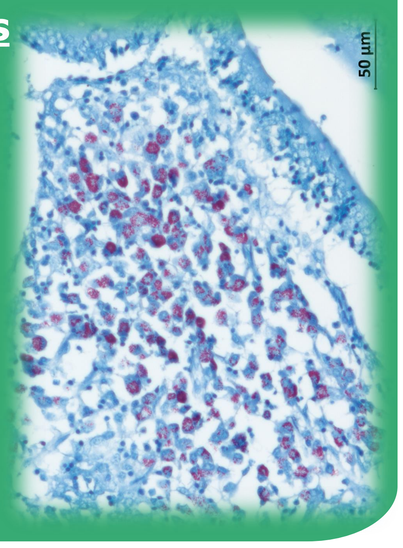
21 goats (> 3 years).

Samples

Faeces, ileocecal valve, terminal ileum, mesenteric and ileocecal lymph nodes.

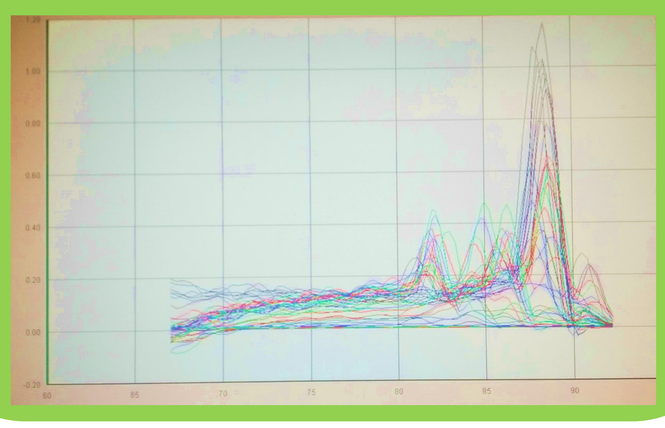
Histopathological analysis

- Tissue fixation: 10% formaldehyde.
- H&E and Ziehl-Neelsen stains.
- Classification of intestinal lesion.
  Pérez et al., 1996 and González J. et al., 2005



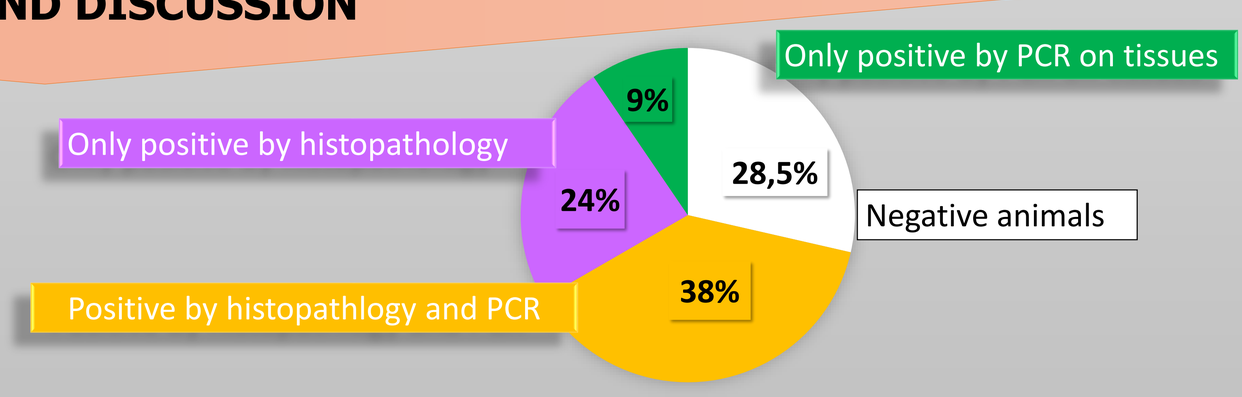
Molecular biology analysis

Real-time PCR (qPCR) for the detection of the Map-specific f57 in faeces and tissue.

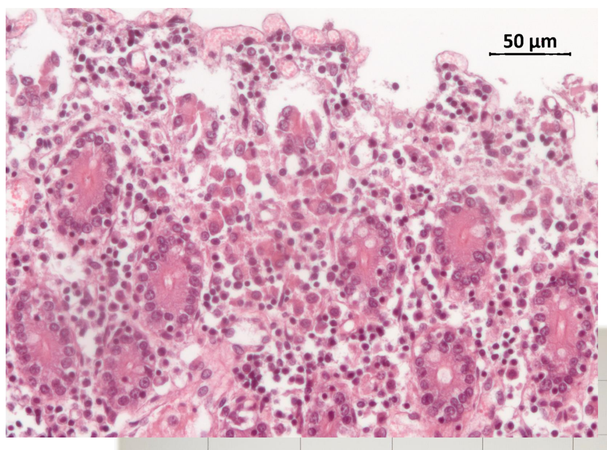


RESULTS AND DISCUSSION

PTB was diagnosed in 71.4% of the goats by any of the tests used (histopathology and qPCR in faeces or tissue).



The 40% of affected animals that were positive in the faecal qPCR mainly exhibited advanced and multibacillary lesions.



Animals PTB +

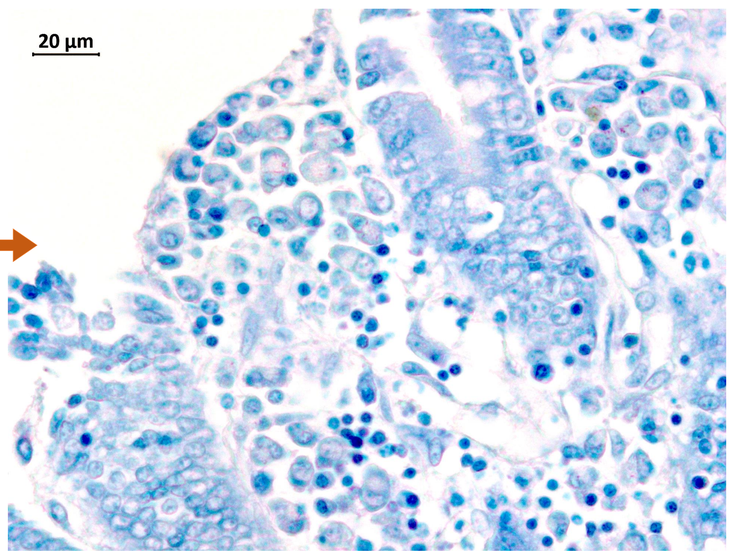
Positive faecal PCR			
Animal	Faeces	Lesion	
		H&E	Z-N
1	Normal	4	1
2	Fluid	4	1
3	Doughy	3	2
4	Doughy	3	2
5	Normal	2	1
6	Doughy	3	2

Negative faecal PCR			
Animal	Faeces	Lesion	
		H&E	Z-N
7	Normal	4	1
8	Normal	2	2
9	Doughy	2	1
10	Normal	1	1
11	Normal	1	1
12	Normal	1	1
13	Normal	1	1
14	Normal	0	0
15	Doughy	0	0

H&E → *0= Absence; 1= Focal; 2= Multifocal; 3= Classic diffuse; 4= Lymphocytic diffuse*

Z-N → *0= Absence, 1= Paucibacillary; 2= Multibacillary*

However, not all animals with mild and paucibacillary lesions were faecal qPCR positive.



The low sensitivity of faecal-PCR may be related to early stages without bacterial replication yet, animals that overcome the infection or a low bacterial load excretion.
(Whittington & Sergeant E, 2001; Keller et al., 2014; Windsor, 2015)

CONCLUSIONS

PTB affected a high percentage of discarded goats without apparent clinical digestive signs.

The faecal qPCR was highly specific but not very sensitive to detect animals with mild lesions and low bacterial load.

REFERENCES: González, J. et al. (2005) *Journal of Comparative Pathology*, *133* (2–3), 184–196; Keller, S. M. et al. (2014) *Acta Veterinaria Scandinavica*, *56*, 68; Pérez, V. et al. (1996). In *Comp. Path* (Vol. 114); Whittington, R., & Sergeant E. (2001) Aust Vet J. 2001 Apr;79(4):267-78; Windsor, P. A. (2015). *Veterinary Microbiology*, *181*(1–2), 161–169.