

# Lungworm infection in small ruminants in mountain areas in northern Portugal

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The breeding of small ruminants in mountain regions in Portugal is based on a traditional production system, on extensive/semi-extensive grazing and direct use of existing natural resources. This study aimed to determine the pulmonary nematode parasitism profile of small ruminants in the Marão (Fig. 1), Aboboreira and Montemuro (Fig. 2) mountains in Portugal.



Fig. 1. Goat flock from Marão Mountain



Fig. 2. Sheep flock from Montemuro mountain

A total of eight flocks (four goat flocks and four sheep flocks) were enrolled for this study, with different number of animals, in different occasions, during a period from autumn of 2018 to autumn of 2020. A modified Baermann method was performed in individual faecal samples from the different flocks in order to diagnose lungworm infection.

357 out of 629 individual faecal samples were positive for lungworm larvae (56.1%). The prevalence varied from 13% to 100% in the examined samples from the goat flocks, and from 0% to 89% in the sheep flocks, during the different seasons of the period of the study.

Moreover, prevalence was higher in the spring (66.1%) compared to the autumn (56.8%) and the summer (48.3%) seasons. Lungworms were more prevalent in goats (75.9%) than in sheep (10.6%). Most of the positive animals were infected with *Muellerius capillaris* (99%) (Fig. 3). *Cystocaulus ocreatus* and *Dictyocaulus filaria* were also identified, but only in three and two sheep respectively. Most of the animals were asymptomatic. One goat flock had co-infection with *Pasteurella* spp.



Fig. 3. *Muellerius capillaris* L1

This study shows that lungworms in small ruminants in mountain areas are highly prevalent, especially in goats.

The presence of pulmonary nematode parasitism should be considered to apply the correct specific anthelmintic treatment in goats and sheep (higher dose and/or repeated treatment) to reduce, particularly, the prevalence of *M. capillaris*, and avoid possible clinical or subclinical symptoms that can result in important production and economic losses.

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Pequenos Ruminantes  
no Douro Verde



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