

Risk Factors Associated to Protostrongylidae Infection in Small Ruminants from Centre Region of Portugal



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Objectives

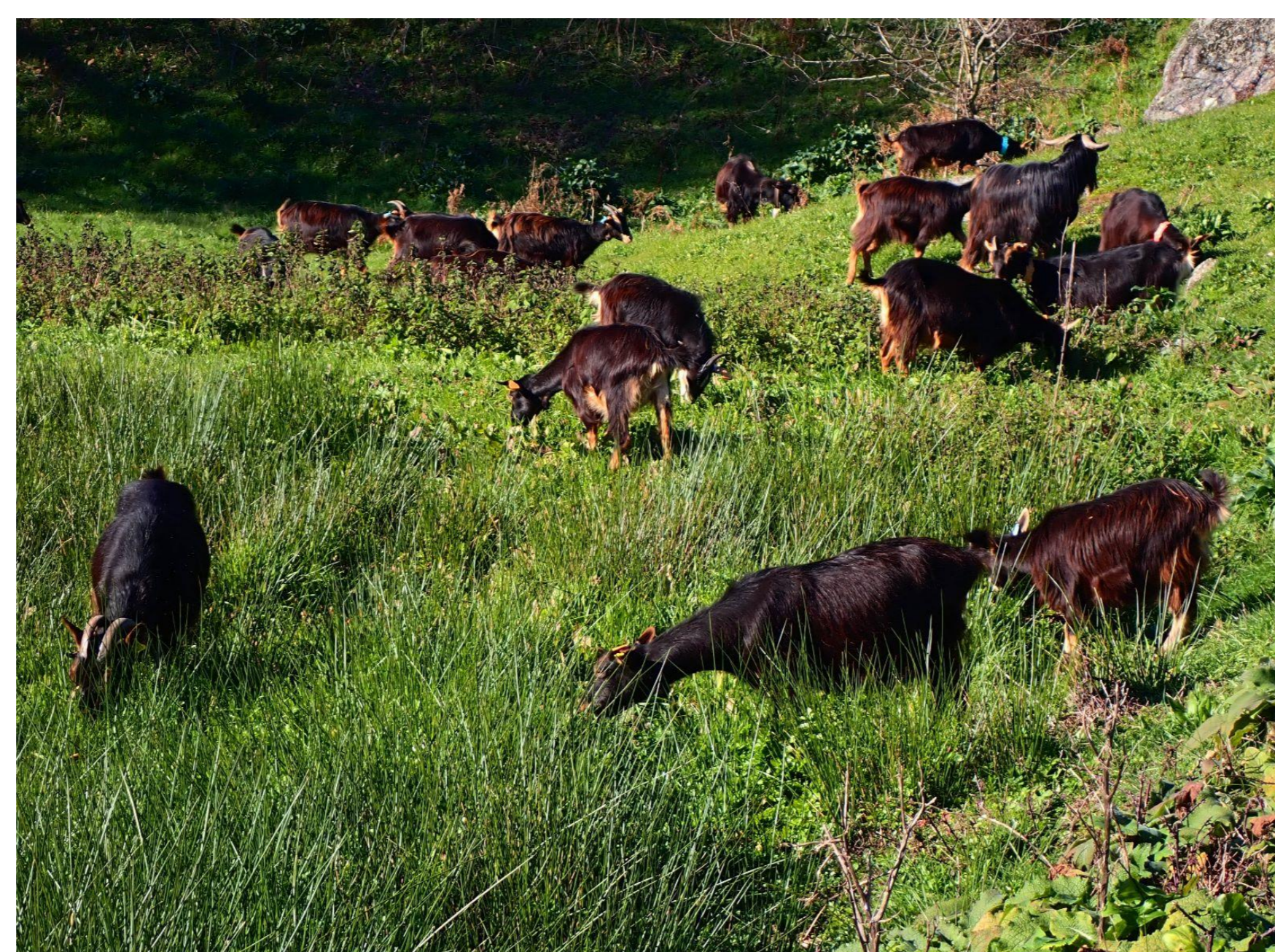
Small ruminant production in Centre region of Portugal is essentially conducted in a semi-extensive husbandry system, exposing animals to parasitic infections, which can negatively impact the production. *Dictyocaulus filaria* and several species of the family Protostrongylidae can infect sheep and goat, causing generally subclinical infection or mild respiratory clinical signs. To our knowledge, no reports have been published on lungworm infection in small ruminants in Portugal. Thus, this study aimed to estimate the prevalence of lungworm infection and identify risk factors to define appropriate control measures.

Materials and Methods

Faecal samples of 203 goats and 208 sheep from 30 herds, located in three districts of Centre region of Portugal were collected per rectum and subjected to modified Baermann test. First stage larvae (L1) were morphologically identified under optical microscopy. Background information from herds and parasitological results were subjected to descriptive and inferential statistical analysis. Binary logistic regression (method Forward conditional) was used to identify risk factors associated to Protostrongylidae infection.

Results

Protostrongylidae



Protostrongylidae, *D. filaria*



The overall prevalence of lungworm infection was 57.7% (95% CI: 0.525-0.624), significantly higher in goats (95.6%; 0.921-0.978) than in sheep (20.7%; 0.156-0.266). All animals were infected by species of the Protostrongylidae family, except three sheep that presented *D. filaria* simple infection.

| Variable | Presence % | Absence % | Chi-square (p) | Binary logistic regression (OR; p) |
|---|------------|-----------|----------------|------------------------------------|
| Species | | | | |
| Goats | 95.6 | 4.4 | <0.001 | Ref. |
| Sheep | 20.7 | 79.3 | | 0.032; 0,136 |
| Pasture sharing | | | | |
| Yes | 12.4 | 87.6 | <0.001 | Ref. |
| No | 72.2 | 27.8 | | 3.755; 0,017 |
| Deworming frequency | | | | |
| Twice a year | 21.5 | 78.5 | <0.001 | Ref. |
| Annual | 80.2 | 19.8 | | 12.316; 0,001 |
| Dewormer | | | | |
| Eprinomectin (Eprex [®]) | 48.3 | 51.7 | <0.001 | Ref. |
| Albendazol (Sinvermin [®]) | 92.5 | 7.5 | | 0.016; 0,001 |
| Mebendazol + Closantel (Seponver plus [®]) | 34.7 | 65.3 | | 0.057; 0,006 |
| Ivermectin + clorsulon (Topimec [®]); Ivomec F [®]) | 85.5 | 14.5 | | 0.223; 0,052 |

Conclusions

The risk of Protostrongylidae infection was slightly higher in goats than in sheep, as frequently documented. Sharing pastures appears to be a protective factor, probably by increasing the extent of available pasture, which dilute its contamination with infective terrestrial molluscs. The frequency of deworming has a greater protective effect than the anthelmintic compound used, pointing to the importance of biannual deworming in controlling Protostrongylidae infection.

- The risk of Protostrongylidae infection was low in sheep compared with goats;
- The risk of infection for animals that do not share pastures was 3.755 times higher than for those that share pastures;
- Animals dewormed annually presented a risk of infection 12.316 times higher than those dewormed every six months;
- Animals dewormed with albendazol, mebendazol plus closantel or ivermectin plus clorsulon presented a risk of infection 0.016, 0.057 or 0.223 times lower than those dewormed with eprinomectin, respectively.

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