SHORT COMMUNICATION

Multiple anthelmintic resistance of *Haemonchus contortus*, including a case of moxidectin resistance, in a Dutch sheep flock


Context
Multiple anthelmintic resistance of gastrointestinal nematodes is a major concern in the sheep and goat industry. This study investigated a suspected case of moxidectin (MOX) resistance in a sheep flock in the Netherlands.

Main conclusion
The results confirmed resistance of *Haemonchus contortus* to MOX in a sheep flock in the Netherlands. In the same flock, resistance to doramectin (DRM) and fenbendazole (FBZ) was also present.

Approach
A faecal egg count reduction test was conducted in six groups of lambs on a sheep farm with suspected MOX resistance. Group 1 was an untreated control group, and groups 2, 3, 4, 5 and 6 were treated with MOX, DRM, monepantel (MPL), FBZ and a levamisole/triclabendazole (LEV/TCBZ) combination, respectively. A composite larval culture was made of each group before and after treatment.

Results
Treatment efficacy with MOX, DRM, MPL, FBZ and LEV/TCBZ was 76.5 per cent, 39.8 per cent, 100 per cent, 57.8 per cent and 100 per cent, respectively. Larval identification of coprocultures at day 0 showed that all larvae in the control group were *H. contortus*. In the MOX, DRM, MPL, FBZ and LEV/TCBZ groups, *H. contortus* made up 97 per cent, 95 per cent, 94 per cent, 97 per cent and 98 per cent of the larvae, respectively. Larval identification of coprocultures after treatment with MOX, DRM and FBZ revealed 99 per cent, 100 per cent and 98 per cent *H. contortus* larvae, respectively. In the LEV/TCBZ group, only five larvae were detected. No larvae were detected in the MPL group.

Interpretation
Limited use of anthelmintics and correct anthelmintic dose rates combined with targeted grazing management are important features of modern parasite control, especially when the proportion of susceptible nematodes exposed to the anthelmintic is high at the time of treatment.

Significance of findings
This is a proven case of resistance of *H. contortus* to MOX, DRM and FBZ. Management measures to prevent a positive selection pressure for anthelmintic resistance are even more important when considering that long-term reversion to susceptibility is unusual.

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