

Anthelmintic resistance and common worm control practices in sheep farms in Belgium

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Abstract

In contrast to many other European countries, no data were available on the presence of anthelmintic resistance in gastrointestinal nematodes in sheep in Belgium. A faecal egg count reduction test was performed in 26 sheep farms (29 flocks) in Flanders, Northern Belgium. Results indicated widespread resistance against benzimidazoles (albendazole, fenbendazole and mebendazole), with treatment failure (FECR < 95 %) in all 8 flocks investigated. *Haemonchus contortus* and *Teladorsagia circumcincta* were the predominant species after treatment failure. Amino acid substitutions associated with benzimidazole resistance were detected at the codon positions 167 (8%) and 200 (92%) of the isotype-1 beta tubulin gene in *H. contortus*, codon positions 198 (47%) and 200 (43%) in *T. circumcincta* and position 200 (100%) in *T. colubriformis*. Resistance against macrocyclic lactones (ivermectin, doramectin and moxidectin) (FECR < 95%) was recorded on 7 out of 20 flocks, mainly in *H. contortus* and *T. circumcincta*. Treatment failure was also observed for closantel (in combination with mebendazole) (FECR 53%) and for monepantel (FECR 44%), on one farm each. *Trichostrongylus* spp. and *Cooperia curticei* were implicated with resistance against monepantel.

A questionnaire survey on farm management and worm control measures indicated that worm control was often not sustainable. Ewes and lambs were treated frequently (on average

2.6 and 3.2 times per year), mostly without weighing. Only few sheep farmers (9%) regularly used faecal egg counts to monitor worm infections. Despite the FECRT showing treatment failure, most of the farmers perceived the efficacy of anthelmintics as good (54%) to very good (29%). Only 12% and 4% evaluated the anthelmintic efficacy as mediocre or insufficient, respectively.

In conclusion, anthelmintic resistance is widespread in Belgian sheep flocks. There is an urgent need to efficiently promote sustainable worm control practices to sheep farmers and veterinarians.

Keywords

Sheep, gastrointestinal nematodes, anthelmintic resistance, single nucleotide polymorphism, sustainable worm control