

Assessing anthelmintic resistance in gastrointestinal nematodes of Scottish dairy cattle

Paul Campbell¹, Andrew Forbes¹, Jennifer McIntyre¹, Roz Laing¹, Kathryn Ellis¹

Affiliations:

1: School of Biodiversity, One Health and Veterinary Medicine, University of Glasgow, Glasgow, UK

Anthelmintic resistance is increasingly reported in cattle worldwide, although reports from Europe and the UK are more limited. This study aimed to evaluate the efficacy of three of the most widely used anthelmintics in cattle (fenbendazole, ivermectin, and moxidectin) against naturally acquired gastrointestinal nematode (GIN) infections using the faecal egg count reduction test.

A total of 210 first grazing season spring-born calves were enrolled from four Scottish farms. Each treatment group consisted of 15-19 individuals. Post-treatment faecal egg counts were performed 14-15 days after treatment. The resistance status was evaluated based on the reduction in arithmetic mean faecal egg count and the lower and upper 95% confidence limits. Reduced efficacy where the criteria for susceptible was not met was observed in 9/11 treatment groups, of which four were classed as resistant. The remaining five groups were classed as inconclusive where neither criterion for susceptible nor resistant were met.

All enrolled farms exhibited reduced efficacy of ivermectin and moxidectin. Ivermectin resistance was confirmed on two farms, one of which was also confirmed to be moxidectin resistant, and the other fenbendazole resistant. The dual ivermectin and moxidectin resistant farm also harboured dual ivermectin and moxidectin resistant bovine lungworm.

Reduced efficacy to anthelmintics was widespread on the sampled dairy farms, with resistance to fenbendazole, ivermectin, and moxidectin detected. British cattle rearing relies on pasture-based production, maximising the contribution of grazing to the diet. Effective GIN control is critical in these systems and to-date has been dependent on efficacious anthelmintics.