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Main topic : Animal Health

Prevalence of gastrointestinal parasites and molecular Identification of beta-tubulin mutations associated with benzimidazole resistance in *Haemonchus contortus* in goats from selected districts of Uganda

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Introduction: Gastrointestinal parasites are among the most economically important pathogens of small ruminants causing serious economic losses and animal welfare problems for the livestock industry worldwide. The emergence of anthelmintic resistant *H. contortus* in small ruminants is a serious problem because it undermines effective helminth control and results in reduced productivity. Little is known about resistance to benzimidazoles (BZ) in *Haemonchus* in goats and sheep in Uganda. The objective of this study was to determine the prevalence of gastrointestinal parasites and to identify the presence of benzimidazole resistance associated mutations in the β -tubulin isotype 1 gene of *Haemonchus contortus* in goats from selected districts of Uganda.

Methodology: A total of 200 goats from 10 districts of Uganda slaughtered at Kalerwe abattoir in Kampala were sampled for *H. contortus* adult worms. Faecal samples were also collected to detect other intestinal parasites. Faecal microscopy and analysis were performed using flotation and sedimentation techniques. DNA was extracted from adult worms and PCR and sequencing of the ITS- 2 region and β -tubulin isotype 1 gene performed to identify *H. contortus* species and determine the presence of mutations associated with anthelmintic resistance respectively.

Results : Faecal microscopy showed that the most prevalent intestinal parasites were coccidia (98%), strongyles (97.5%), *Strongyloides* (82%), *Paramphistomum* (74.5%), *Moniezia* (46%), *Fasciola* (1.5 %) and *Trichuris* (1%). Most goats were considered to have a high intestinal burden of coccidia (? 5000 oocyst per gram) and strongyles (? 1000 egg per gram), 65% and 67.5%, respectively. The prevalence of *H. contortus* adult worms was 63% (126/200). Sequencing of the partial β -tubulin isotype 1 gene of 54 *Haemonchus contortus* adult male isolates revealed the presence of mutations associated with anthelmintic resistance.

Conclusion and Recommendations: The F200Y mutation was the most common mutation (13% of samples with good beta-tubulin sequences) followed by the E198A and E198K mutations, both found in 9% of samples with good beta tubulin sequences. Mutation F167Y was not identified in any of the samples and there were no heterozygous individuals for any of the SNPS associated with BZ resistance that were identified in this study. These findings highlight the need for controlled use of anthelmintics especially benzimidazoles, to enable sustainable control of *H. contortus* in Uganda, and a need for further investigation to understand the resistance of other parasites identified in this study.