

Molecular diagnostic for levamisole resistance in *Haemonchus contortus*

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Abstract Content

In tropical areas, *Haemonchus contortus* is the leading cause of production losses in small ruminant herds and its control is traditionally done through the utilization of synthetic anthelmintics. Levamisole, an imidazothiazole derivative, is widely used in Brazil and the occurrence of resistance is not uncommon. The genetic base for levamisole resistance in *H. contortus* is still under investigation, but it has been recently associated with a 63 bp deletion in the Hco-acr-8 gene, which codes for one of the subunits of a levamisole-sensitive acetylcholine receptor. Here we describe a real time PCR test for the detection and quantification of the presence and absence of this deletion. Reactions contained 12.5µl 2x Fast Start Universal SYBR Green Master Mix (Roche, West Sussex, UK), 0.3 pmol/µl of each primer (forward and reverse), 50 ng of DNA and water for a total volume of 25µl. Amplification conditions were: 95 °C for 10 min and 35 cycles at 95 °C for 15 s and at 56 °C for 30 s. We tested the assay in two known *H. contortus* isolates, one resistant (Kokstad isolate - KOK) and another susceptible (Inbred-susceptible-Edinburgh - ISE). We also used the test to characterize a local *H. contortus* population previously exposed to levamisole. Preliminary results are in agreement with previously reported data as only the resistant allele was detected in the KOK isolate and both alleles were detected in the ISE isolate suggesting that this test may be useful in the fast detection of levamisole resistance in *H. contortus*.

Keywords: Haemonchus, levamisole, resistance, diagnostic, molecular