

ABSTRACT

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Title: Expression of histone deacetylases in *Haemonchus contortus*

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Haemonchus contortus is a significant gastrointestinal parasite of ruminants, and its resistance to commonly used anthelmintics represents a serious issue in livestock farming. Histone deacetylases (HDACs) play a key role in the epigenetic regulation of gene expression and represent potential targets for new drugs. This study focuses on the analysis of relative HDAC expression in *H. contortus* at different developmental stages of an anthelmintic-sensitive strain (ISE) and a resistant strain (IRE). Using quantitative PCR, the expression levels of individual HDAC genes were compared in eggs, larvae, and adults of *H. contortus* from both the ISE and IRE strains, and the effect of albendazole on HDAC expression in adult *H. contortus* was monitored to identify potential key enzymes in the parasite's life cycle and enzymes potentially involved in drug resistance.

By comparing HDAC expression across different developmental stages of *H. contortus* from the ISE and IRE strains, it was found that HDAC expression significantly changes throughout the life cycle. All HDACs (except HDAC2) were most highly expressed in eggs. Females showed significantly higher expression of all HDACs (except HDAC3) compared to males. Statistically significant differences in HDAC expression between the ISE and IRE strains were mostly observed in the egg, L3 larval, and xL3 stages. HDAC2 showed higher expression in eggs, larvae, and males of the IRE strain than in the ISE strain. In females of the IRE strain, HDAC6 expression was significantly lower compared to females of the ISE strain. When testing the effect of albendazole on HDAC expression in adult *H. contortus*, no significant effect of this anthelmintic on HDAC expression was detected.