

ABSTRACT

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Title of diploma thesis: Effect of fenbendazole on biotransformation enzymes of Barber's pole

Barber's pole worm (*Haemonchus contortus*) is a parasitic nematode in the gastrointestinal tract of small ruminants. In infected animals it causes a disease called haemonchoses. Its signs are anaemia, weight loss and animals are in general not thriving. In numerous cases it can cause death. For treatment of this disease substances called anthelmintics are used. Parasite resistance to all groups of these drugs has been a worldwide problem for several years. It is probably due to frequent and inaccurate use of anthelmintics when the parasites are exposed to sub-lethal doses of the drug. Mechanisms of resistance vary depending on anthelmintic group and its mechanism of action. This thesis focuses on studying mechanism of resistance of *H. contortus* to fenbendazole, a benzimidazole anthelmintic. Changes in expression of some biotransformation enzymes and efflux transporters genes could contribute to resistance.

In this study expression of selected genes of biotransformation enzymes and efflux transporters from CYP (cytochromes P450), UGT (UDP-glucosyltransferases) and P-gp (P-glycoprotein) groups in adults of *H. contortus* from two strains, the resistant IRE (Inbred resistant Edinburgh strain) and a susceptible ISE (Inbred Susceptible Edinburgh) was studied. Worms were exposed to fenbendazole (1 μ M) for 4 and 12 hours. Expression of selected genes encoding biotransformation enzymes was analysed by quantitative PCR. The results were normalized by reference genes GAPDH and NCBP and related to control (0,10% DMSO). Change of expression was observed only in the *pgp-9.2* gene in females of IRE strain after 12-hour incubation. This efflux transporter could have a role in fenbendazole resistance in *H. contortus* females.