

Abstract

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Title of diploma thesis: Effect of monepantel on the expression of selected enzymes in *Haemonchus Contortus*

Barber's pole worm (*Haemonchus contortus*) is parasitic nematode which is the cause of haemonchosis, worldwide distributed disease of small ruminants leading to decrease in productivity and in many cases even to animals death. For prevention and treatment of this disease are used drugs for a long time – anthelmintics. Due to their frequent use and lack of innovation in this group of drugs parasites have gradually built an extensive resistance to these drugs. New hope in therapy of haemonchoses is monepantel, drug belonging to aminoacetonitrile derivatives which have unique mechanism of action. This drug was launched more than 25 years after registration of the last drug from the group of anthelmintics. Despite the initial great success information about occurrence of resistance often appear in recent years. Current knowledge about the mechanisms of resistance development and the factors that influence them is as well as information about drug action at the molecular level still insufficient. To limit the development of resistance in future it is important to extend this knowledge.

In this project, the influence of monepantel on expression of selected genes of the parasite *Haemonchus contortus* from two strains – sensitive ISE (Inbred Susceptible Edinburgh) and resistant WR (White river) was studied. Tests were performed with parasites cultivated in medium containing monepantel for 12 or 24 hours. Parasites cultivated in medium without drug was used as a control. Expression of the selected genes from cytochrome P450 family was evaluated by quantitative PCR. Significant changes were found in both strains and sexes.