

ABSTRACT

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Title of diploma thesis: Differences in expression of selected microRNA in sensitive and resistant nematodes

Anthelmintic resistance has become a worldwide growing problem in veterinary medicine due to excessive and inappropriate drug use. Understanding the mechanisms of resistance development could help prevent the spread of resistance and effectively fight resistant individuals.

Haemonchus contortus is the most extensively studied parasitic nematode in this regard, because it has the ability to develop resistance to all major classes of anthelmintic drugs and at the same time it has good biological and physiological aspects.

Because several recent studies have shown that a change in the expression or activity of so-called microRNAs (miRNAs), small non-coding ribonucleic acid molecules, is also involved in the drug resistance, were monitored in this diploma thesis the differences in the expression of nine selected miRNAs between susceptible (ISE) and multidrug-resistant (WR) strains of *H. contortus* using the qPCR method.

Several significant differences in the expression of selected miRNAs were found between ISE and WR adults. Significant differences in the levels of selected miRNAs were also found between males and females of *H. contortus*.

It was further investigated whether some miRNAs can affect the expression of genes for UDP-glycosyltransferase (UGT) biotransformation enzymes. However, *the in silico* predicted interaction of miR-9551 and the potential target gene UGT371A1 has not been demonstrated in *in vitro* experiments.