Abstract

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Title of diploma thesis: **Plasmid constuction for expression of reductase from *Haemonchus contortus***

Haemonchus contortus is the most important pathogenic nematode of small ruminants, mostly sheep and goats. It causes haemonchosis leading to massive deaths of infected animals. Pharmacotherapy by approved anthelmintics is the main solution to the disease. Currently, the growing resistance to available antihelmintics is still bigger and bigger problem, leading to economical and ecological issues.

There are many causes of resistance. Among the non-target site mechanisms of resistance belongs the increased activity of enzymes from the first biotransformation phase mediating carbonyl-reduction; specifically aldo/ketoreductases and dehydrogenases/reductases. Increased activity of these enzymes leads to faster drug metabolism, formation of inactive metabolites and therapy failure.

The aim of the thesis was to prepare a plasmid for the expression of selected reductase, which can be used for further study of the activity and possibly design of new targeted drugs. Method, which were used during my experimental work, involved isolation of RNA, reverse transcription, PCR, restriction digest, ligation, colony PCR, plasmid isolation and sequence verification and cell transfection for protein expression.