

## ABSTRACT

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Title of diploma thesis: Plasmid construction for expression of *sdr12* reductase from *Haemonchus contortus*

The barber's pole worm (*Haemonchus contortus*) is a parasitic nematode causing a severe disease known as haemonchosis, affecting livestock, especially sheep and goats. Anthelmintic resistance represents a significant problem in the agricultural sector, with notable economic impacts associated with decreased animal productivity. Short-chain dehydrogenases/reductases (SDRs) are essential enzymes involved in the biotransformation of xenobiotics and may relate to anthelmintic resistance.

The theoretical section describes the barber's pole worm, haemonchosis, treatment resistance, and the biotransformation of xenobiotics focusing on SDR enzymes.

The experimental section involves the preparation of a vector (plasmid) carrying the protein-coding region of the *sdr12* gene to express and isolate the recombinant protein. The results were achieved by using molecular biology methods such as PCR, ligation of the insert to vector, transformation of competent cells, restriction enzyme digestion, DNA sequencing, agarose gel electrophoresis, and western blot.

The recombinant protein will be used for further functional characterization of enzymatic activity, which can contribute to the development of new therapeutic strategies and a better understanding of the resistance mechanisms.