

# ABSTRACT

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Title of diploma thesis: **Effect of parasite on activity of biotransformation and antioxidant enzymes in host intestine**

*Hymenolepis diminuta*, known as a rat tapeworm, is commonly used in science as a model of *Cestoda* for studying physiology, biochemistry and drug metabolism in tapeworms. Recently, *Hymenolepis diminuta* has been studied for helminth-based therapy for a potential treatment of inflammatory bowel disease. The aim of this study was to determine how *H. diminuta* influences the activity of detoxification enzymes of the host intestine. At first 6 male rats (Wistar breed) were infected by cysticercoids of *Hymenolepis diminuta* previously isolated from the beetles *Tenebrio molitor* (intermediate host). At the same time the physiological saline solution was administered to the control group of 6 male rats. All rats were housed for 2 months in animal quarters with 12 h light/dark cycle. Thereafter, the tapeworms were removed from their intestines. Intestinal mucosa containing metabolic active enzymes was isolated. Subsequently, the subcellular fractions were prepared and used for *in vitro* experiment. The activity of enzymes was measured by spectrophotometry and spectrofluorimetry. The results show that *H. diminuta* is able to affect the activity of biotransformation and antioxidant enzymes. The activity of some enzymes of the Phase I of metabolism was influenced, several isoforms of cytochrome P450 and reductases. The activity of conjugation enzymes, especially sulfotransferases, was increased in intestine of rats infected by *H. diminuta*. Concerning the antioxidant enzymes, the activity of catalase and peroxidases were increased in comparison with the control group. The results of this study helped to deepen knowledge how the helminth *Hymenolepis diminuta* can influence its host.