ABSTRACT

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Title of diploma thesis: Effect of albendazole on the activity of selected enzymes in tapeworm *Hymenolepis diminuta*

The efficacy of anthelmintics used to treat diseases caused by helminths is not always sufficient, and in some cases, we are directly facing resistance to these drugs. Helminths, including tapeworms, are able to defend against the toxic effect of anthelmintics using several mechanisms. Xenobiotic metabolizing enzymes and transport proteins belong to these mechanisms. When xenobiotic metabolizing enzymes are induced, the efficacy of therapy may be significantly reduced. The effect of xenobiotic metabolizing enzymes on the drug resistance development has been already described in number of helminths. In tapeworms this information is still missing.

Main aim of this study was to determine effect of drug albendazole on the activity of selected xenobiotic metabolizing enzymes in rat tapeworm (*Hymenolepis diminuta*). Tapeworms were incubated with albendazole (1 μM and 10 μM) for 24 hours. Then activities of selected enzymes in cytosol-like, microsome-like and mitochondria-like fractions were determined. This study is focused on activity of carbonylreductase, two isoforms of aldoketoreductase (AKR1C and AKR1A1), catalase, superoxide dismutase, peroxidase, glutathionereductase activity of thioredoxin-glutathionreductase, glutathione-S-transferase, UDP-glucuronosyltransferase and UDP-glucosyltransferase.

The effect of albendazole on the activity of enzymes in *H. diminuta* has been demonstrated. The activity of some enzymes was increased in cytosol-like and microsome-like fractions, and on the contrary decreased in mitochondria-like fraction. Increased activity of these enzymes in *H. diminuta* supports the hypothesis that xenobiotic metabolizing enzymes participate in drug resistance development in tapeworms.