ABSTRACT

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Title of diploma thesis: The effect of albendazole on the antioxidant system of alfalfa in real conditions

Anthelmintics are drugs used to treat diseases caused by parasitics worms. In the Czech republic they are mainly used in veterinary medicine. Benzimidazole anthelmintic albendazole is used in cattle and sheep, during its biotransformation metabolites are formed, which are excreted together with the parent compound in faeces. Application of faeces from treated cattle to the field may affect non-target organisms, occurring in the field. An example of such organisms are agricultural crops, including alfalfa (*Medicago sativa*). Plants do not have the ability to eliminate the absorbed drugs and its metabolites, therefore they are deposited in plants and can affect the antioxidant system of plants.

The aim of this study was to monitor the effect of albendazole on the antioxidant system of alfalfa (*M. sativa*) in real conditions. Plants were affected by faeces of sheep treated with albendazole. Subcellular fractions were prepared from harvested plants in the years 2019 and 2020. The concentrations of photosynthetic pigments (chlorophylls and carotenoids) were also measured in the 2020 plants.

In both years, there was an increase in the activity of ascorbate peroxidase, catalase, glutathione S-transferase and peroxidase in albendazole treated plants. The carotenoid concentration of the treated samples was significantly reduced by albendazole and the chlorophyll A/chlorophyll B ratio and the chlorophyll A+B/carotenoid ratio increased.

The obtained results show that albendazole affected the antioxidant system of alfalfa, which may result in damage of plant cells by oxidative stress.