ABSTRACT

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Title of diploma thesis: Monitoring the spread of albendazole from the sheep faeces in agricultural land by LC-MS

The anthelmintic drug albendazole (ABZ) with a broad-spectrum anthelmintic effect is used for the treatment of helminthiasis caused mainly by gastrointestinal worms in veterinary and human medicine. Frequent dose, overdose or underdose make a risk of developing resistance, which can be a serious global problem in the treatment of helminthiasis. The anthelmintics can enter the environment unchanged as a parent compound or as a metabolite through the faeces of treated animals. These chemicals can be absorbed into plants, soil and groundwater and they can have a negative impact on the life and growth of smaller organisms.

This study aimed to monitor the distribution of albendazole and its transformation products (TPs) albendazole sulfoxide (ABZSO) and albendazole sulfone ($ABZSO_2$) from the faeces of treated domestic sheep in agricultural land. TPs amount was analysed in soil sampled in different distances and depths from faeces of sheep treated with recommended dose of ABZ. The parent drug and TPs were extracted from soil using the solid-phase dispersion extraction (QuEChERS) and identification and quantification were done by UHPLC-MS. As expected, the amount of the compounds in the soil was greater in the topsoil than in the bottom layer and it decreased with the distance from the faeces. We also observed the dependence of changes in substance concentration on rainfall (dry and rainy months).