

ABSTRACT

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Title of bachelor thesis: The optimization of fenbendazole extraction from environmental samples

Anthelmintics are drugs used for the treatment and prophylaxis of infectious diseases caused by parasitic worms. In the Czech Republic, they are mainly used in veterinary medicine. During the biotransformation of the active substance, metabolites are formed, which are excreted together with the parent substance in faeces and urine. Fenbendazole and other similar substances can be absorbed into the soil in this way and subsequently act on non-target organisms in the environment. Fenbendazole is widely used in livestock farming, and since animal excrements are often further used for fertilization, the risk of the content of medicinal substances should be strictly monitored.

For this purpose, it was necessary to develop and optimize the extraction method and also to carry out the corresponding validation of the analytical method, which will subsequently be applicable to real samples in the environment. The assumption of absorption of fenbendazole and its metabolic products, fenbendazole sulfoxide and fenbendazole sulfone, into the soil was the subject of the research itself.

The soil was extracted using the QuEChERS method, which works on the principle of solid-phase extraction. The QuEChERS method included d-SPE step. For detection, a chromatographic method was used combined with a mass spectrometer analyser (UHPLC-MS/MS). This combination is widely used in the determination of trace amounts of substances in environmental samples.