

# Abstract

Occurrence, accumulation and subsequent fate of pharmaceuticals in environment currently represent a very actual topic. Worldwide, thousands of tons of pharmaceutical substances are consumed every year. A large portion of pharmaceuticals is, in unchanged or metabolized forms, disposed *via* sewage systems and wastewater treatment plants. Considering the fact that wastewater treatment processes are not able to completely eliminate all active substances or their metabolites, pharmaceuticals are systematically washing out into the water system and increasingly contaminate the ground and surface waters. The problematics of continuous control and progressive elimination of pharmaceutical residues from environment are still not completely solved. Thus, the development and availability of accurate and fast commercial analyses are highly desired.

The aim of this diploma thesis was the optimization and validation of multi-residue UHPLC–MS/MS analytical method designated for the determination of 52 pharmaceuticals in drinking and waste waters. The work was carried out in laboratories of ALS Czech Republic. An analytical method was subsequently used for monitoring of pharmaceuticals in both drinking and waste waters, as well as for the determination of efficiency of removing these compounds within the wastewater treatment processes. The obtained data correspond with the recently published studies devoted to this problem.

## Key words

Pharmaceuticals, UHPLC–MS/MS, optimization, validation, monitoring, drinking water, waste water.