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Monitoring of sulfonamides, macrolides and other pharmaceuticals in surface waters in Croatia

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Sulfonamides, macrolides, torasemide, fumagillin and chloramphenicol were simultaneously analyzed in surface water samples by using solid-phase extraction (SPE) and reversed-phase (RP) liquid chromatography-electrospray tandem mass spectrometry (LC-ESI-MS/MS). In the pre-concentration and clean-up process, the pH value of samples and volume of the solvent for extraction of analytes from cartridge were optimized. Extraction recoveries were high with values in the range from 62 to 115%. Limits of quantification (LoQ) were in the range from 0.02 μg L^{-1}–0.2 μg L^{-1}. Repeatability of the method was evaluated at LoQ and expressed as relative standard deviation (RSD). Calculated RSDs were low with values in the range from 2.4 to 14.5%. The method was successfully applied for analysis of the real samples of surface waters. Samples were collected along the rivers in Croatia on 19 sampling sites in Danube and Adriatic catchment areas in 2013, and another 20 places in 2014. Altogether, 20 target compounds were analyzed in 362 water samples and detected in 24 samples in the range, 0.02–5.3 μg L^{-1} or in 6.6% of samples. The most frequent and highest concentrations were detected for macrolide antibiotics. This is the first attempt of monitoring of antibiotics in surface waters in Croatia.

Biography

Irena Žuntar is working as a Full Professor and Specialist of Toxicology at University of Zagreb, Faculty of Pharmacy and Biochemistry, Croatia. She is Course and Unit Leader of Toxicology. Also, she considerably designed postgraduate specialist university program of Toxicology for health professionals and others interested or working in the field. She participated as Expert in scientific and professional opinions for Ministry of Health and Croatian Food Agency, and now she is in mandate Member of the Evaluation Panel of Croatian Science Foundation for scientific field of Biomedicine and Health, Public Health and Health Protection, and Pharmacy. She was Principal Investigator of a scientific grant and researcher on many scientific projects and gained two scientific awards. She was Supervisor of more than 50 student's diploma thesis, and received 4 Rector Awards and two Dean Awards.

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