

Identification of Transformation Products of Warfarin

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Warfarin, also known as Coumadin is one of the most popular anticoagulant drugs used as a therapeutic in humans to prevent thrombosis, atrial fibrosis, and fibrillation since the 1950s. Because of its ability to hinder blood from clotting by blocking vitamin K-dependent carboxylation of blood clotting precursors, it is also used as a rodenticide worldwide. Until today it has been partially substituted by far more potent anticoagulant rodenticides (ARs), so-called superwarfarins.^[1]

There are numerous references confirming secondary and tertiary poisoning in non-target-animals and wildlife like mammals, birds, and fish associated with ARs. Up to now relatively little is known about persistence and toxicity of transformation products of those AR in the environment and food chain.^[2]

Herein, warfarin was chosen as a model compound to determine and elucidate TPs which are generated technically and under environment-like conditions. Such as the simulation of the oxidative phase I metabolism by implementing electrochemical flow cells coupled to mass spectrometry (MS).^[3]

Obtained results are being compared to TPs generated by UV-irradiation and ozonation.^[4-5] Analysis and separation of degradation products and TPs were achieved by a variety of gas- and liquid chromatographic techniques coupled to (high resolution) MS.

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