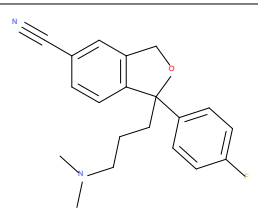
Non Target – News #7

Landesamt für Natur,
Umwelt und Verbraucherschutz
Nordrhein-Westfalen

Citalopram

Citalopram is an antide-pressant of the selective serotonin reuptake inhibitor (SSRI) class.

mass: 324,39 g/mol
CAS: 59729-33-8
$C_{20}H_{21}FN_2O$



The LANUV measurements meet the following criteria necessary for clear identification:

1) match of the exact mass, ± 5 ppm
2) match of the isotope pattern, min. 70 %
3) match of a reference spectrum
4) match of retention time

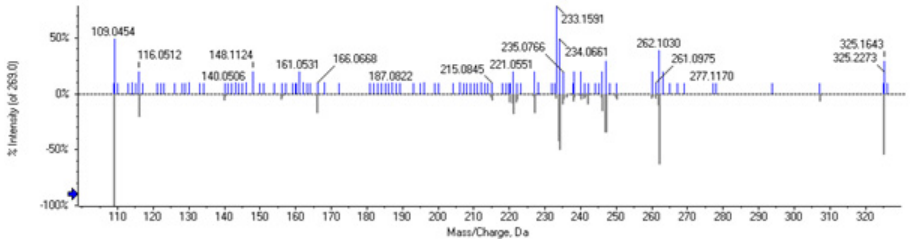


Figure 1: comparison of fragment-ion-spectra, blue: sample Ruhr near Mülheim, gray: reference substance

Analysis and occurrence

Citalopram can be detected with the existing measuring method in negative mode. It was found in all the investigated rivers (Rhine, Ruhr and Wupper) and therefore it belongs to the ubiquitous substances. The general precautionary value of 0.1 µg/L is not exceeded.

Relevance

The substance has a relevant ecotoxicological potential. In 2016 the LANUV derived an EQS-proposal of 6.4 µg/L (LANUV Fachbericht 72) [1]. A study showed that higher concentrations of citalopram had an effect on the swimming and stress behavior of brown trout[2].

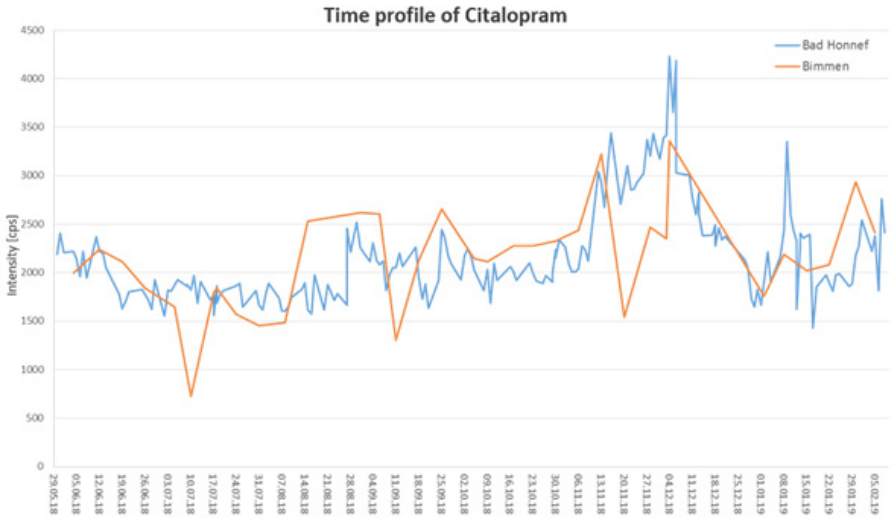


Figure 1: Time profile of Bicalutamide in the river Rhine, orange: Bad Honnef Rhine-km 640, blau: Bimmen Rhine-km 865

Further procedure:

The derived EQS-proposal of 6.4 µg/L is not exceeded in any sample. By further measurements, no gain in knowledge is expected. Therefore, citalopram is not included in the regular monitoring program.

[1] LANUV-Fachbericht 72 (nrw.de) - https://www.lanuv.nrw.de/publikationen

[2] Ziegler et al. (2020) "Impact of the antidepressant citalopram on the behaviour of two different life stages of brown trout" doi: 10.7717/peerj.8765