ABSTRACT

An unknown screening approach to analyze micro pollutants degradation by disinfection processes

Julia Quilitzki

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An unknown screening approach to analyze micro pollutants degradation by disinfection processes. The study involved the identification of micro pollutants in wastewater and their degradation by disinfection processes.

INTRODUCTION

Micro pollutants include substances that evaluate the ecosystem (e.g., hormones, pharmaceuticals, and personal care products). They are mostly from wastewater (TW) before and after disinfection, UV (V) or phenols and Fenton treatment (Fenton). This study showed that the UV treatment (UV) was the most effective method for the degradation of micro pollutants.

MATERIALS AND METHODS

Sample Preparation

Samples were directly injected into the online UHPLC without dilution.

Liquid Chromatography

A 150 mm × 2.1 mm, 5 µm particle size was used. For mobile-phase, a 25:75 H2O:ACN mixture was used. The elution gradient was as follows: 0-2 min, ACN 10%; 2-20 min, ACN 90%; 20-21 min, ACN 100%. The LC started at 200 nm. The LC system was connected to a Thermo Scientific QExactive Plus mass spectrometer.

RESULTS

Target screening and quantification

Figure 5 shows a typical chromatogram of the target compounds. The method showed that the compounds were well resolved and detected with good sensitivity. The compounds were identified by comparing their retention times and fragmentation patterns with those of the standards.

Non-target screening

Figure 5 shows a typical chromatogram of the non-target compounds. The method showed that the non-target compounds were well resolved and detected with good sensitivity. The method can be used for the analysis of micro pollutants in wastewater.

CONCLUSIONS

The study concluded that the unknown screening approach can be used for the analysis of micro pollutants in wastewater. The approach showed good sensitivity and selectivity in the analysis of micro pollutants. The method can be used for routine analysis in wastewater treatment plants.

REFERENCES


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