

Supporting Information

Fate of three psychoactive drugs in Lake Pamvotis: adsorption on sediment and photodegradation in presence of sedimental water extractable organic matter

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Table S1: Rate constants of photodegradation of SER, CLO and CIT in water ($k_{\text{direct photolysis}}$), in the presence of WEOM (k), and in the presence of WEOM+2-propanol ($k_{2\text{-propanol}}$). $k_{\text{direct photolysis}}^*$ corresponds to $k_{\text{direct photolysis}}$ after correction for the screen effect of WEOM

$k(\text{s}^{-1})$	Sertraline	Clozapine	Citalopram
$k_{\text{direct photolysis}}$	1.6×10^{-5}	0.60×10^{-5}	0.13×10^{-5}
$k_{\text{direct photolysis}}^*$	1.4×10^{-5}	0.53×10^{-5}	0.11×10^{-5}
$k = k_{\text{direct photolysis}}^* + k_{\text{WEOM}}$	3.2×10^{-5}	2.5×10^{-5}	2.1×10^{-5}
k_{WEOM}	1.8×10^{-5}	2.0×10^{-5}	2.0×10^{-5}
$k_{2\text{-propanol}}$	0.49×10^{-5}	0.46×10^{-5}	0.44×10^{-5}

Section S1 : Screen effect calculation

The rate of light absorption by drugs (R_a^d) are calculated using the following Eq. SI-1 when they are alone:

$$R_a^d = \sum_{\lambda=290}^{\lambda=500} I_0^\lambda (1 - 10^{-A^\lambda d}) \quad \text{Eq. SI-1}$$

where I_0^λ is the amount of photons received by the samples for the wavelength range $\lambda - \lambda + 5$ nm and $A^\lambda d$ is the absorbance of the drug solution averaged for the same wavelength range.

The rate of light absorption by WEOM (R_a^{WEOM}) is also calculated using Eq. SI-1 by replacing $A^\lambda d$ by $A^\lambda WEOM$.

In the presence of WEOM, the rate of light absorption by the drugs, $R_{a WEOM}^d$ becomes:

$$R_{a WEOM}^d = \sum_{\lambda=290}^{\lambda=500} \frac{A^\lambda d}{A^\lambda d + A^\lambda WEOM} I_0^\lambda (1 - 10^{-(A^\lambda d + A^\lambda WEOM)}) \quad \text{Eq. SI-2}$$

The apparent first order reaction rate constants $k_{\text{direct photolysis}^*}$ of drug disappearance in presence of WEOM are therefore equal to:

$$k_{\text{direct photolysis}^*} = k_{\text{direct photolysis}} \times R_{a WEOM}^d / I_a^d \quad \text{Eq. SI-3}$$

Figure S1: Photodegradation of 2,4,6-trimethylphenol (5×10^{-6} M) upon irradiation in the presence of WEOM (5 mgC.L^{-1}) at pH=7. The slope corresponding to the apparent first order reaction rate constant is equal to $k = 0.020 \pm 0.002 \text{ min}^{-1}$.

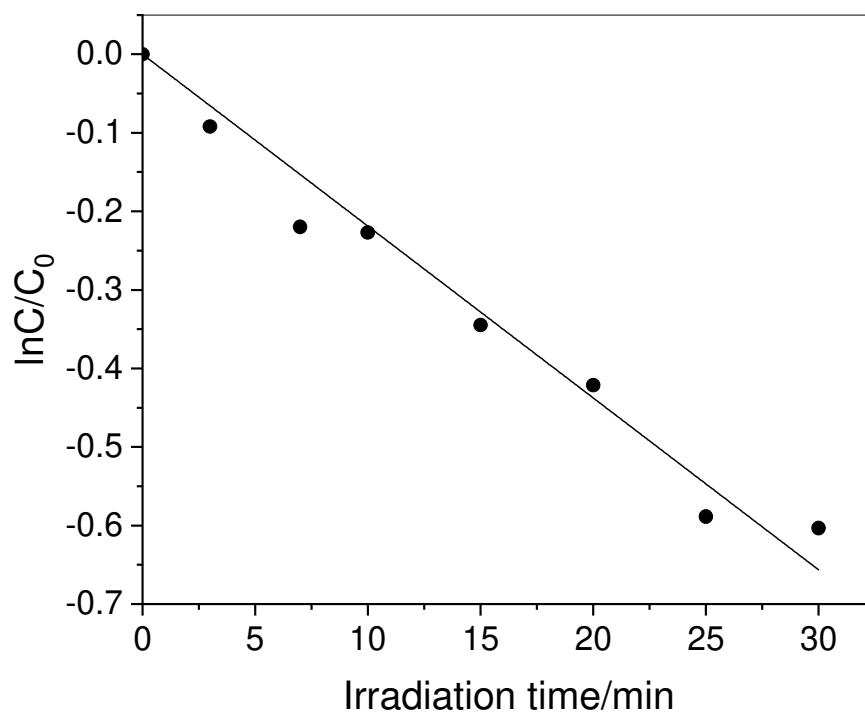


Figure S2: Photodegradation of furfuryl alcohol (10^{-4} M and 5×10^{-5} M) upon irradiation in the presence of WEOM (5 mgC.L^{-1}) at pH=7. The slope corresponding to the apparent first order reaction rate constant is equal to $k = 0.0011 \pm 0.002 \text{ min}^{-1}$.

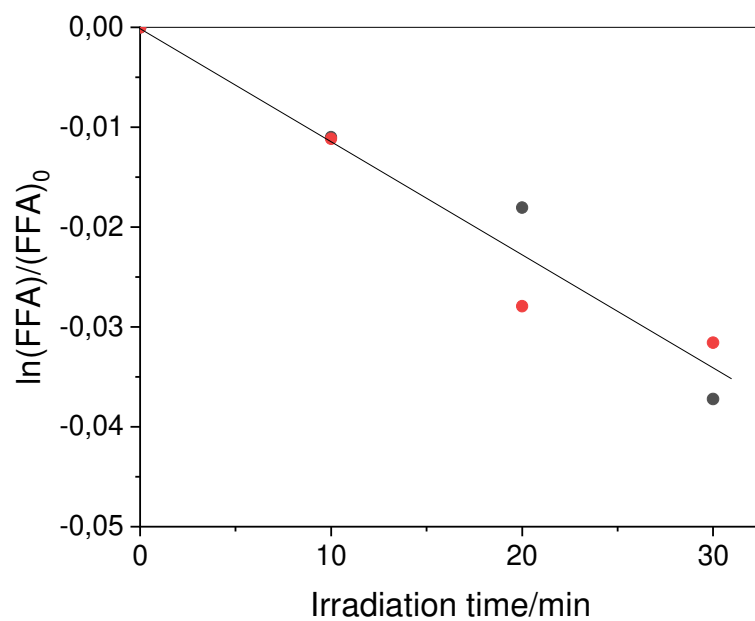


Figure S3: Calibration curve of hydroxyterephthalic acid (TAOH) obtained by UHPLC-HRPS analyses (A) and formation profile of TAOH upon irradiation of terephthalate (10^{-5} M) in the presence of WEOM (5 mgC.L^{-1}) at pH=7 (B). TAOH is formed by reaction of terephthalate with $\text{HO}\cdot$ radicals.

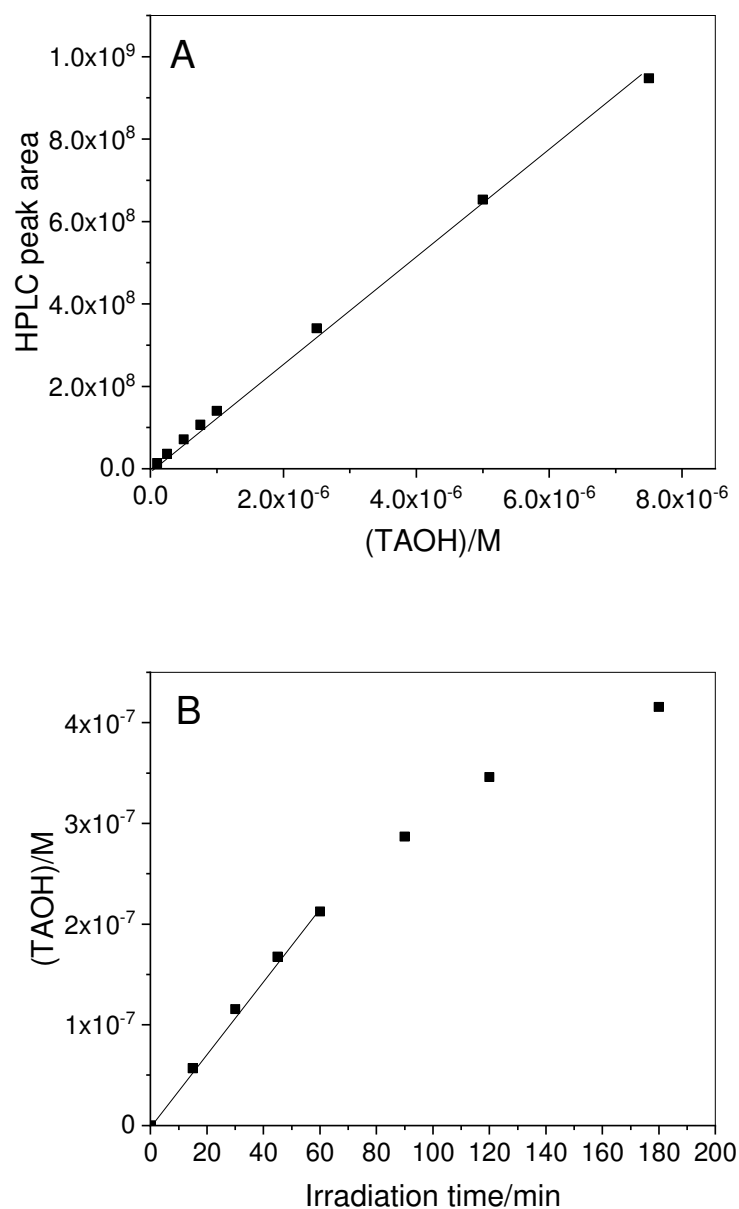


Figure S4: Adsorption of SER (▲), CLO (●) and CIT (○) (0.27-0.29 mg) to sediment. Percentage of adsorbed drug against the amount of sediment in suspension (A) and logarithmic representation of Freundlich equation (B)

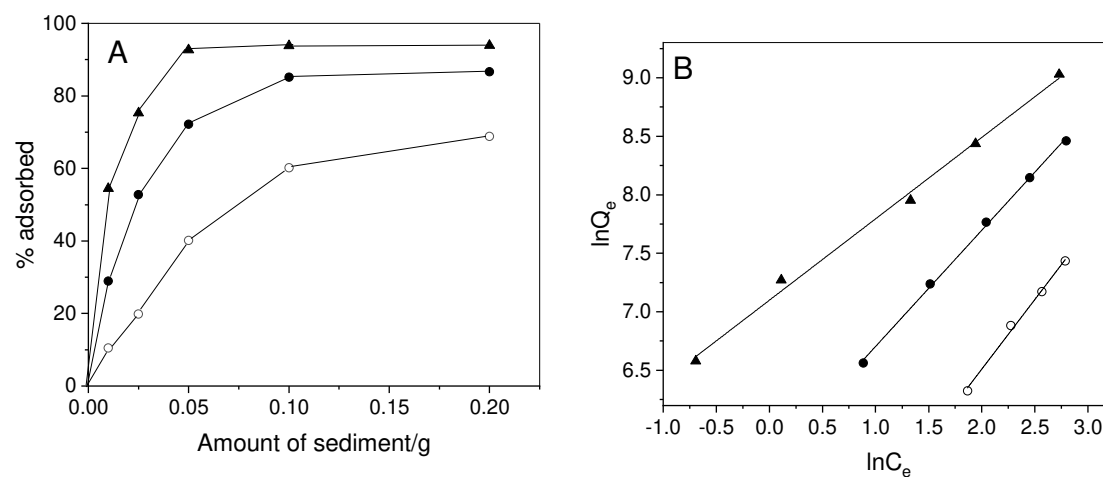


Figure S5: Irradiance of the fluorescent tubes

