Supporting Information

Evaluation of the applicability of the aquatic ascomycete *Phoma* sp. UHH 5-1-03 for the removal of pharmaceutically active compounds from municipal wastewaters using membrane bioreactors

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Contents

Analysis of PhACs and other micropollutants in lab scale degradation experiments employing real wastewater

Initial wastewater samples (100 mL volume) and contents of 300-mL flasks used for batch degradation experiments at lab scale (100 mL initial wastewater volume; fungal biomass as indicated in the main text) were filtered using Whatman no. 1 paper filters (GE Healthcare, Freiburg, Germany). The thus obtained filtrates were further centrifuged at 4 °C and 8200 x g for 15 min. After adjusting the respective supernatants to pH 2.5 with 5 M HCl, solid phase extraction (SPE) using Oasis MCX cartridges (60 mg; Waters, Eschborn, Germany) was performed. The SPE sorbent was pre-conditioned with 2 mL *n*-heptane, 2 mL acetone, 3 x 2 mL methanol, and 4 x 2 mL bi-distilled water (pH 2.5) prior to sample loading. After loading with wastewater samples, the sorbents were dried under a gentle stream of argon gas for 1 h. Elution was performed using 4 x 1 mL acetone as a solvent. After solvent evaporation, extracts were reconstructed in 1 mL methanol.

An HPLC-MS/MS instrument consisting of an Agilent 1260 infinity series HPLC (Agilent Technologies, Waldbronn, Germany) coupled with a QTrap5500 tandem mass spectrometer (SCIEX, Darmstadt, Germany) was used for analyses. The samples were separated on an Ascentis Express C18 column (10 cm x 3 mm I.D., 2.7 µm particle size; Supelco, Seelze, Germany), using the eluents A (H_2O containing 0.1% acetic acid) and B (methanol containing 0.1% acetic acid) at a flow of 300 µL/min. The linear gradient was programmed as follows: start 90 % A, after 5 min 50% A, 12 - 17 min 5% A, and from 17.10 - 22 min 90% A. The column oven was set at 30 °C, and 5 µL of the sample extract were injected.

Scheduled multiple reaction monitoring mode was applied for mass analysis. Electrospray ionization in positive mode used a spray voltage of 5.5 kV (-4.5 kV in negative mode). For quantification, external calibration curves composed of 4-5 concentration points were applied. All samples were measured at least in duplicate (routinely in triplicate). Instrumental blanks and standards were included several times in each analysis batch to check instrumental performance and carryover effects.

Table S1. Concentrations of PhACs and other micropollutants in raw influent wastewater of the full-scale WWTP of Schilde (Belgium), as determined prior to the use of the wastewater for lab scale degradation experiments with *Phoma* sp. UHH 5-1-03.

Compound	**Concentration (ng/L) ± relative standard deviation (%)[1]**
Diclofenac	11.8 ± 78.7
Carbamazepine	15.9 ± 12.2
Ketoprofen	748.7 ± 21.3
Naproxen	168.9 ± 32.1
Caffeine	2144.3 ± 5.6
Acesulfame	3248.3 ± 32.4
Ibuprofen	111.3 ± 10.1
Ciprofloxacin	20.1 ± 47.8

[1] Means ± standard deviations for triplicate determinations.

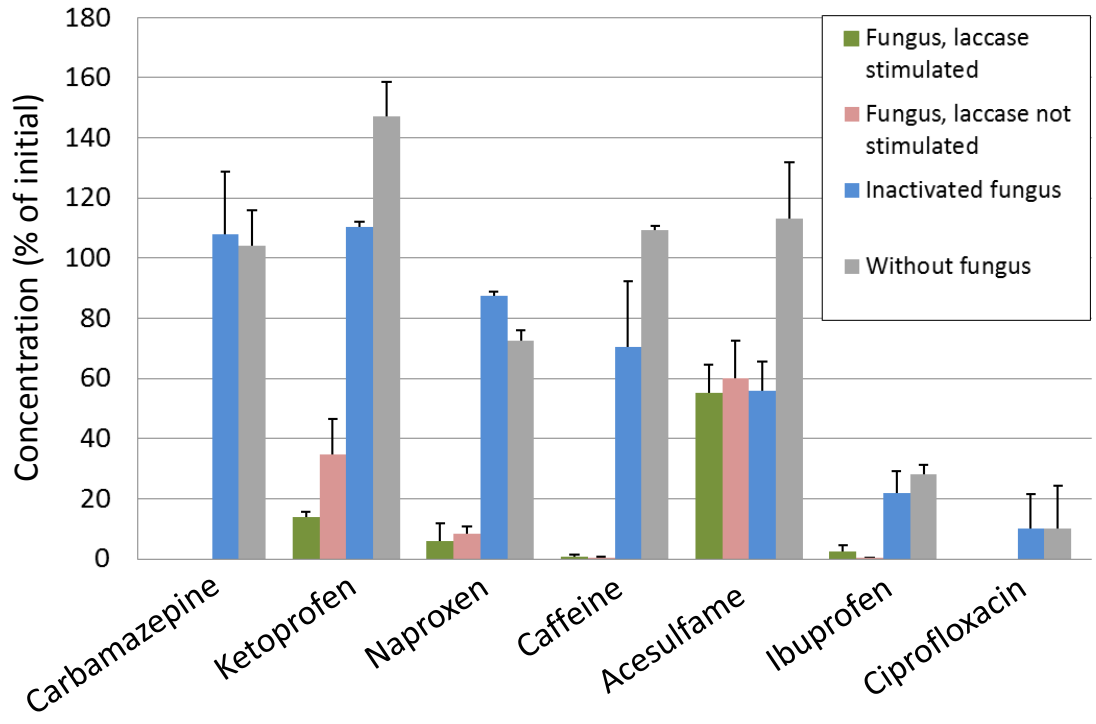

Figure S1. Relative wastewater concentrations (% of the initial values shown in Table S1 above) of PhACs and other micropollutants after lab scale treatment of wastewater with *Phoma* sp. UHH 5-1-03 for 20 days (2 days for caffeine and ibuprofen, which were most rapidly removed also in the absence of active *Phoma* sp.). Batch degradation experiments employing active *Phoma* sp. with stimulated laccase production; experiments containing active *Phoma* sp. without stimulation of laccase production; control experiments employing *Phoma* sp. together with 1 g/L NaN_3, in order to inactivate biological degradation; and further experiments omitting *Phoma* sp. (not biologically inactivated) were performed. Data represent means ± standard deviations for triplicate experiments.