

Relative contribution of ammonia oxidizing bacteria and other members of nitrifying activated sludge communities to micropollutant biotransformation

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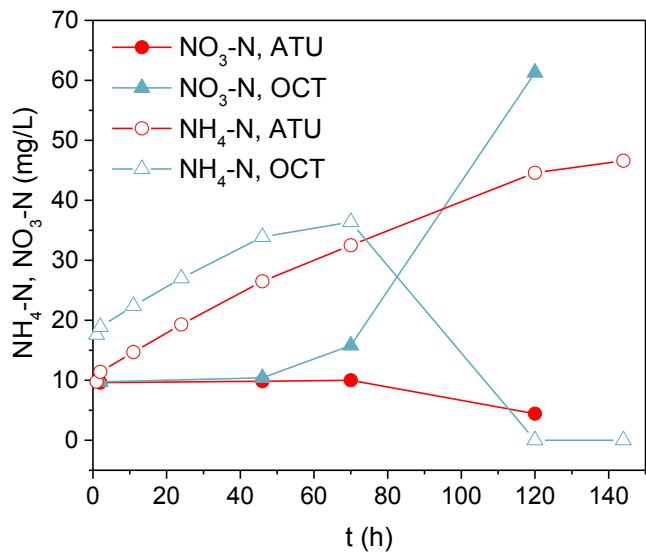


Fig. S1. Ammonium consumption and nitrate formation in ATU- and OCT-treated AUR reactors.

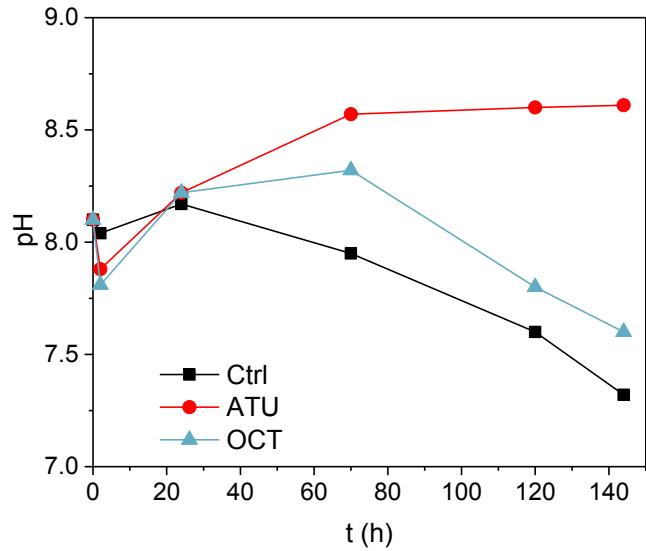
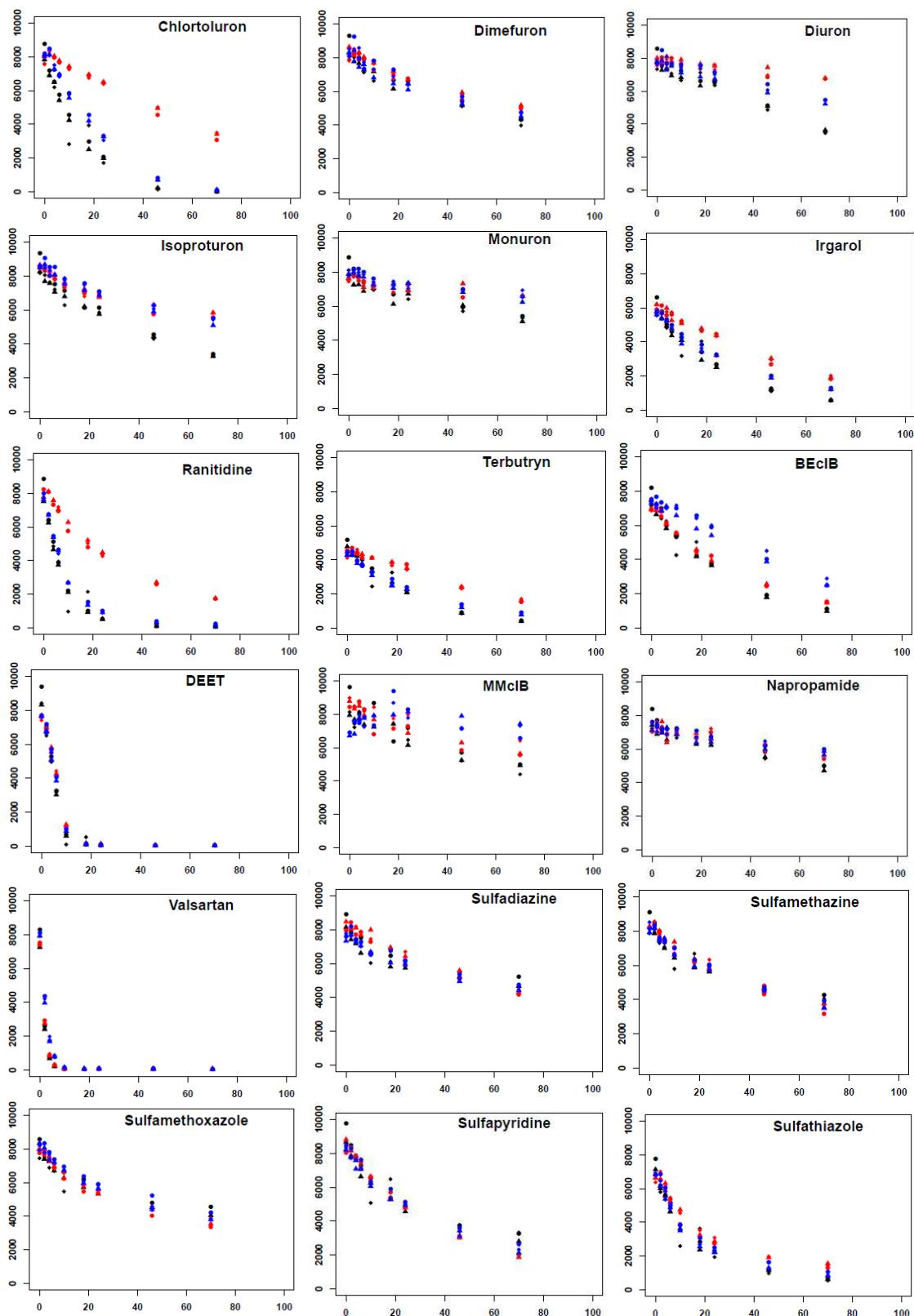
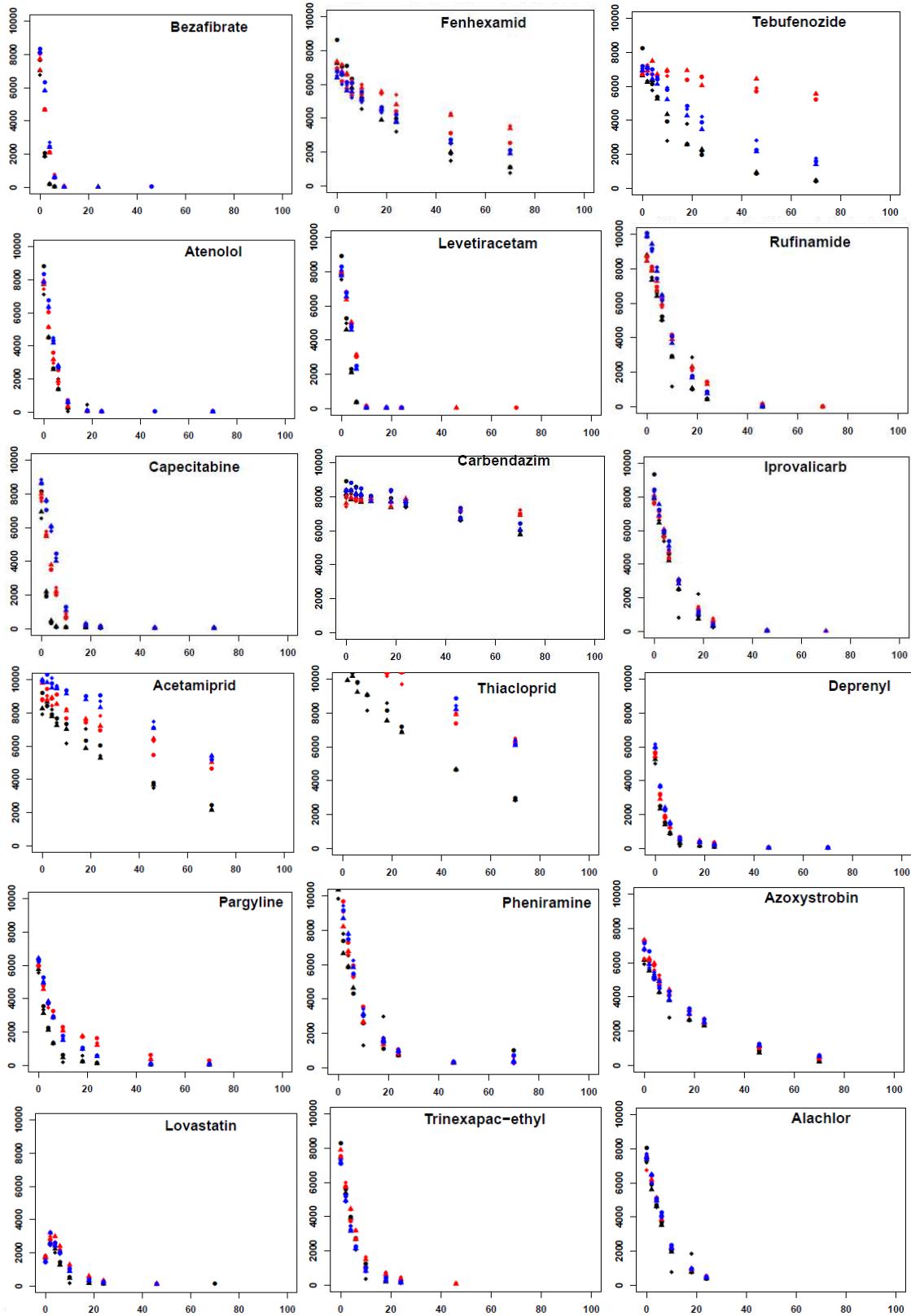
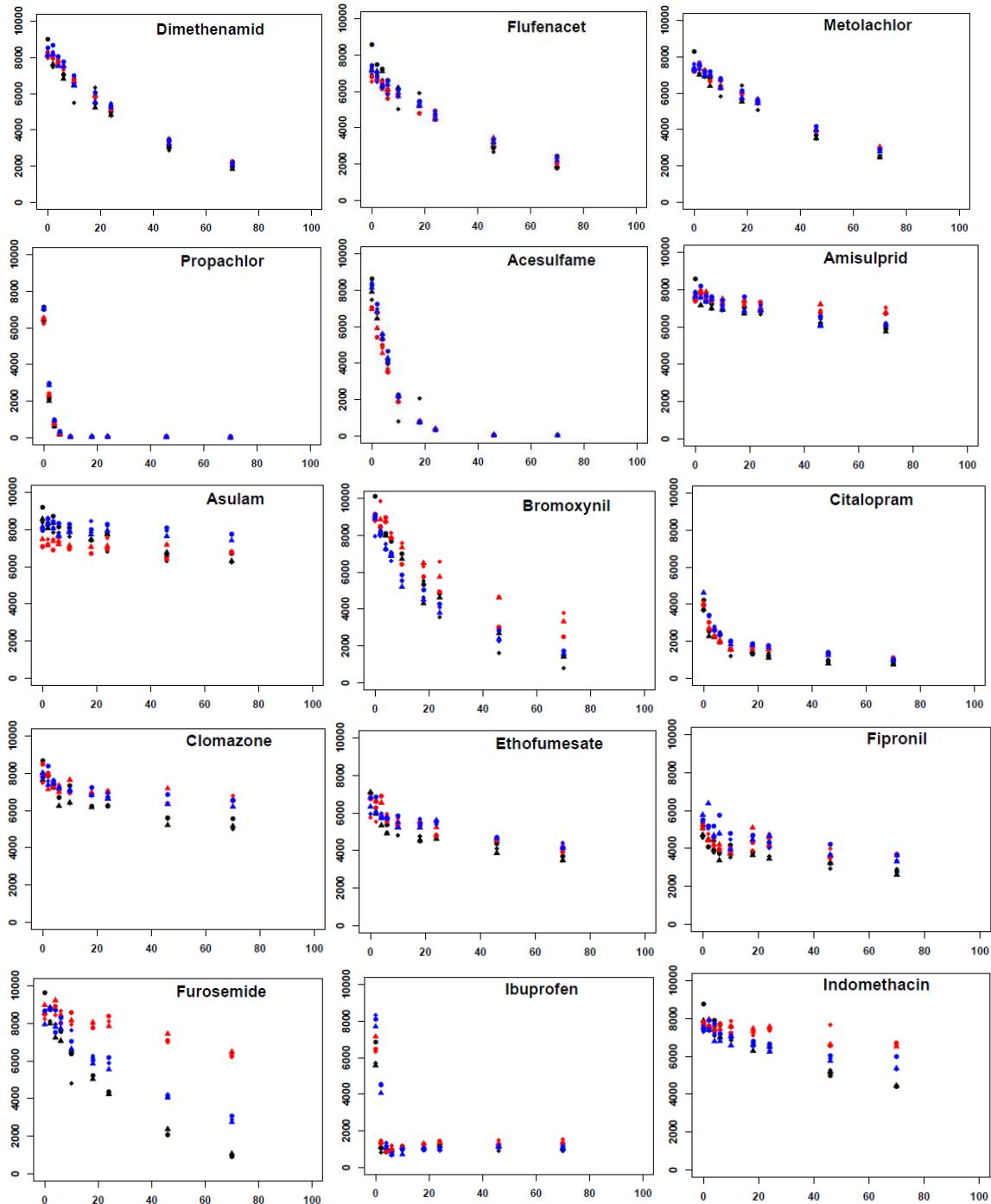


Fig. S2. pH in inhibitor-treated and untreated control reactors.







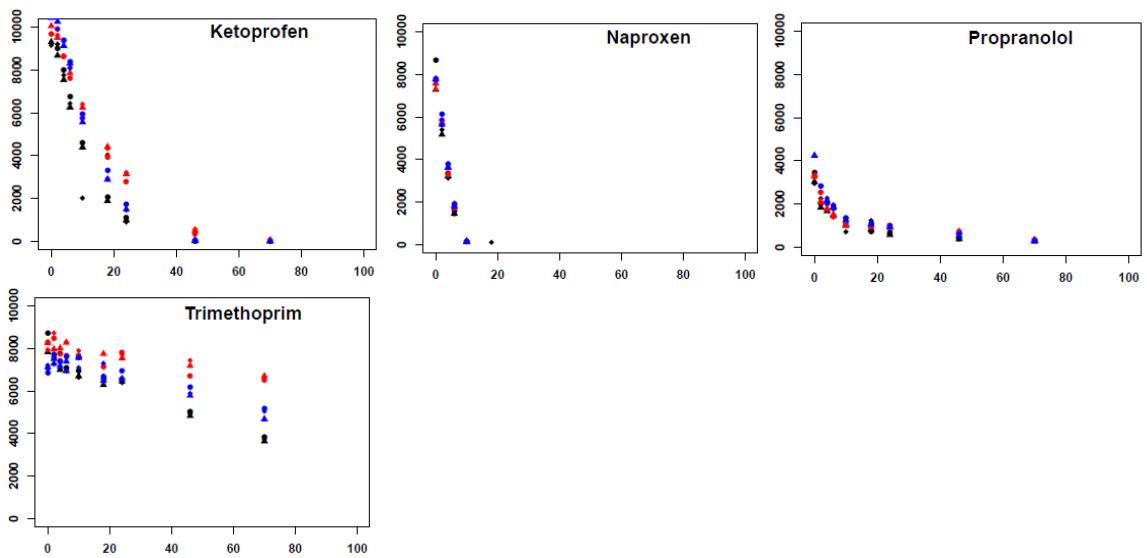


Fig. S3. Biotransformation curves of the 55 MPs with relative removals > 20% (x-axis: Time (h); y-axis: compound concentration (ng/L); black: Pos. Ctrl; blue: OCT; red: ATU; round, triangle and diamond symbols represent the three replicates under each condition.

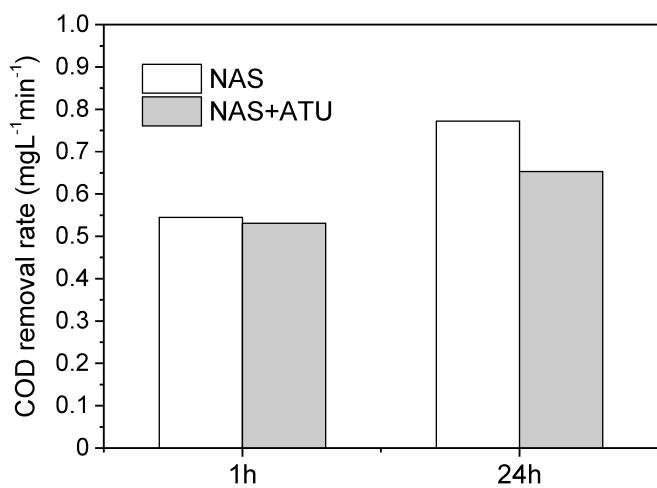


Fig. S4. COD removal rates in ATU-treated and untreated reactors.

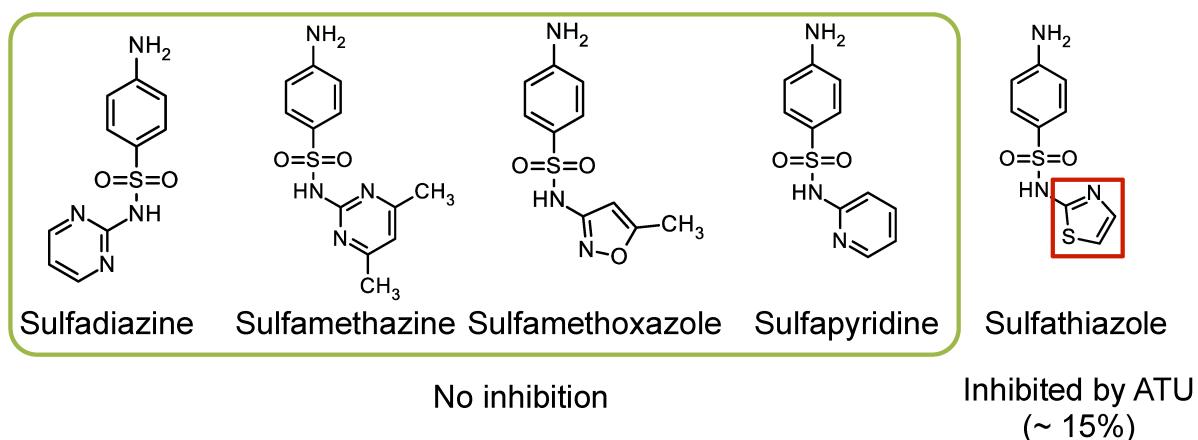


Fig. S5. Chemical structures of the five sulfonamide antibiotics investigated.

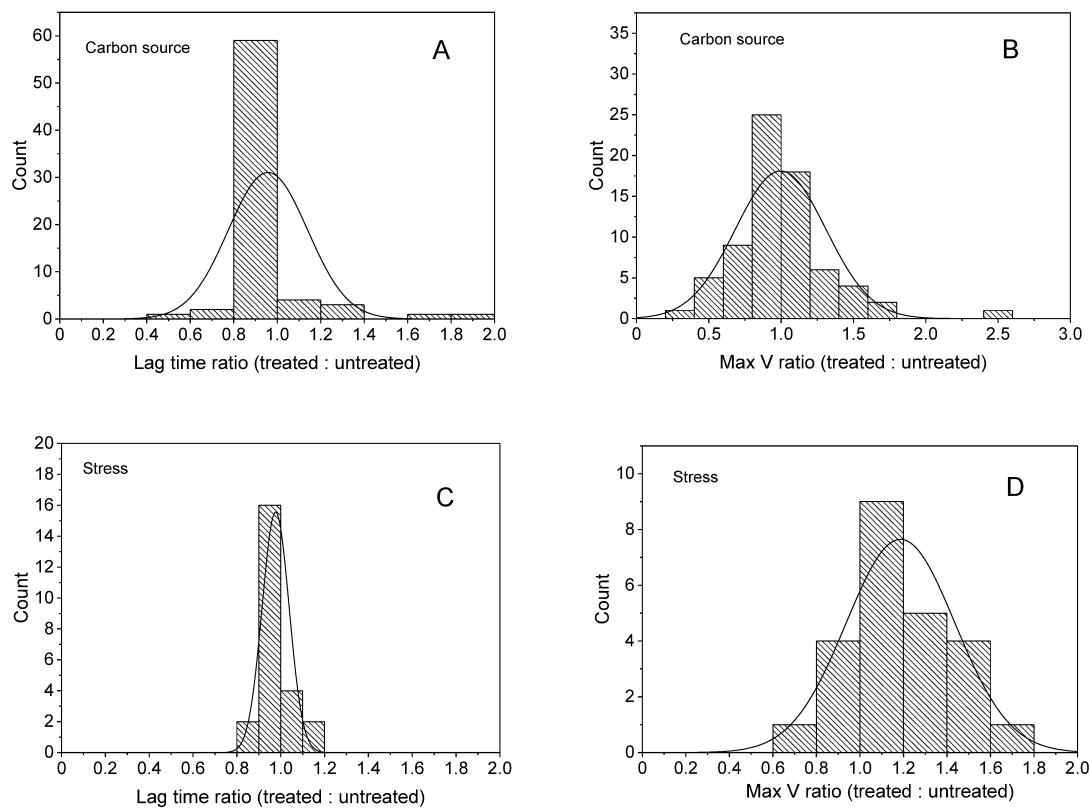
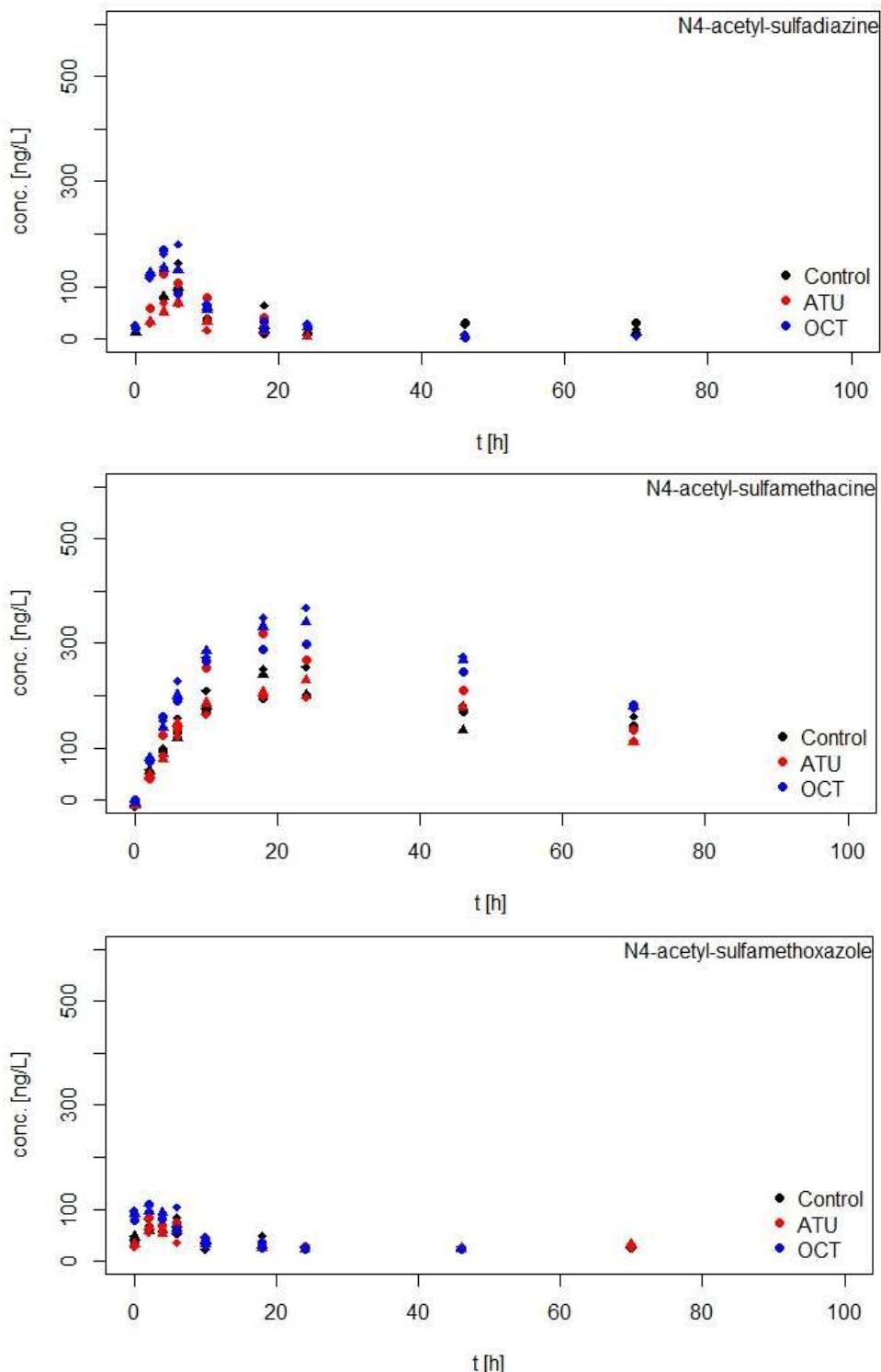


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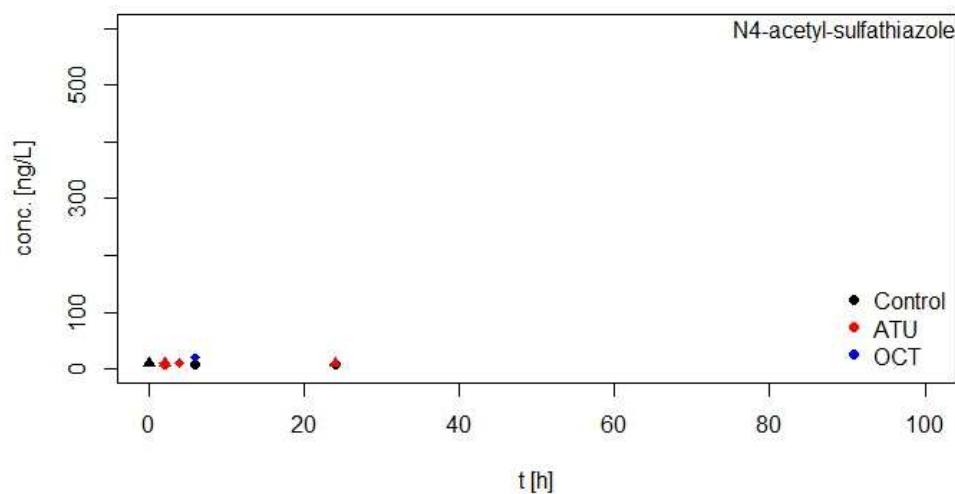
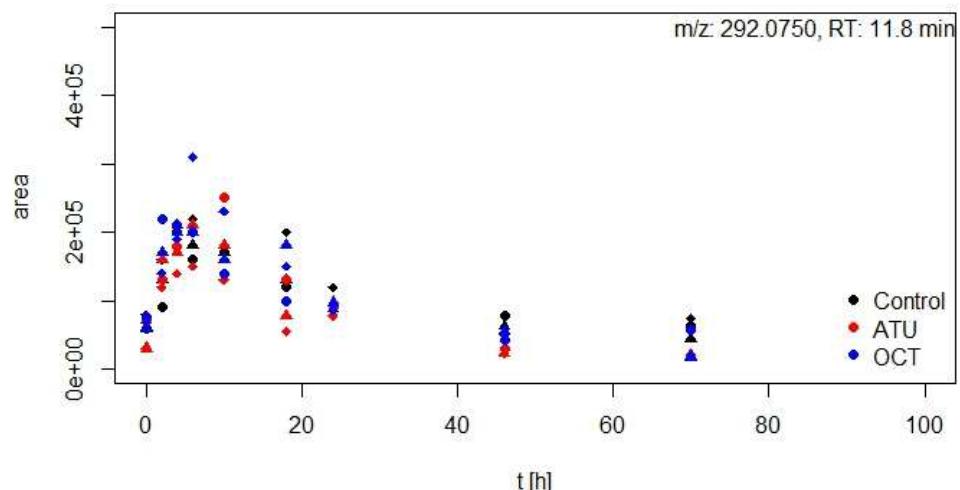
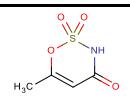
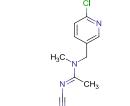
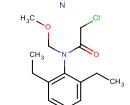
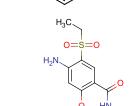
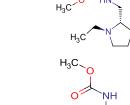
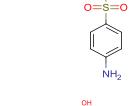
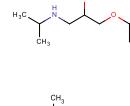
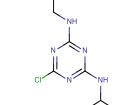
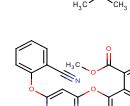
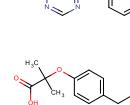
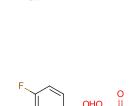
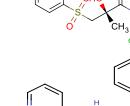
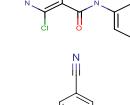
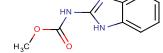
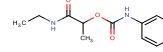
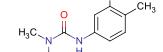
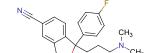
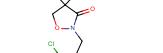
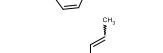
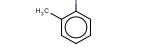
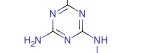
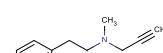
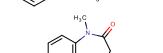
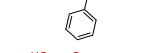
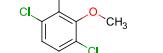
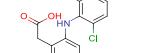
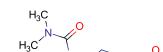
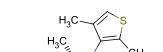
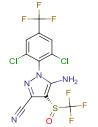
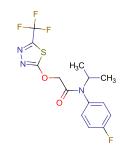
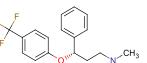
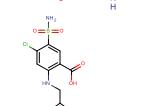
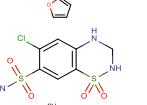
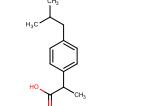
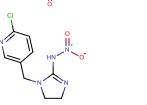
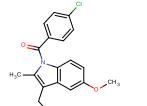
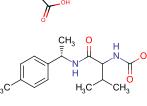
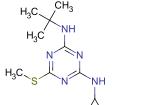
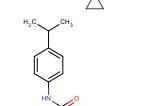
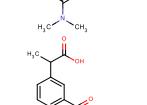
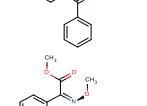
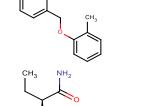
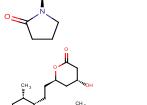


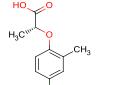
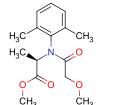
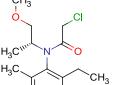
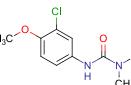
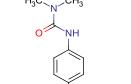
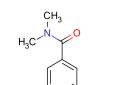
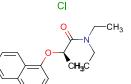
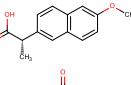
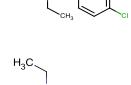
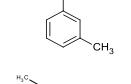
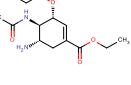
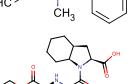
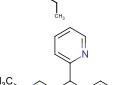
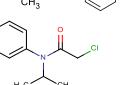
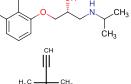
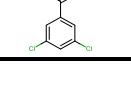
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Table S1 List of MPs and internal standards used for LC-MS/MS

MP	Ionization mode	m/z	InSTD	Structure	Classification
Acesulfam	negative	161.9867	Acesulfam-D4		others
Acetamiprid	positive	223.0745	Dimethoate-D6		amidine
Alachlor	positive	270.1255	Alachlor-D13		chloroacetanilide
Amisulpride	positive	370.1795	Amisulpride-D5		others
Asulam	positive	231.0434	Atenolol-acid D5		others
Atenolol	positive	267.1703	Atenolol-D7		primary amide
Atrazine	positive	216.1011	Atrazine-D5		triazine
Azoxystrobin	positive	404.1241	Bezafibrate-D4		ester
Bezafibrate	positive	362.1154	Bezafibrate-D4		secondary amide
Bicalutamide	negative	429.0538			secondary amide
Boscalid	positive	343.0399	Bezafibrate-D4		secondary amide
Bromoxynil	negative	273.8509			Others
Capecitabin	positive	360.1565	Atrazine-D5		Carbamate

Carbendazim	positive	192.0768	Carbendazim-D4		Carbamate
Carbetamide	negative	235.1088			Carbamate
Chlortoluron	positive	213.0789	Chlortoluron-D6		phenylurea
Citalopram	positive	325.1711	Citalopram-D6		Others
Clomazone	positive	240.0786	Naproxen-D3		others
Crotamiton	positive	204.1383	Dimethenamide-D3		Tertiary amide
Cyromazine	positive	167.1040	Morphine-D3		Triazine
Deprenyl	positive	188.1439	Diazinon-D10		Amine
Diazepam	positive	285.0789	Diazepam-D5		Tertiary amide
Dicamba	negative	218.9621	Dicamba-D3		Ether
Diclofenac	positive	296.0240	Diclofenac-D4		Others
Dimefuron	positive	339.1218	Diuron-D6		Phenylurea
Dimethenamide	positive	276.0820	Dimethenamid-D3		Chloroacetanilide
Diuron	positive	233.0243	Diuron-D6		Phenylurea
Ethofumesat	positive	287.0948	Bezafibrate-D4		Others
Fenhexamide	positive	302.0709	Terbutylazine-D5		Secondary amide
Fenoxy carb	positive	302.1387	Terbutylazine-D5		Carbamate

Fipronil	negative	434.9314		Others	
Flufenacet	positive	364.0737	Terbutylazine-D5		Chloroacetanilide
Fluoxetine	positive	310.1413	Fluoxetine-D5		Ether
Furosemide	negative	329.0004			Others
Hydrochlorothiazide	negative	295.9572			Amine
Ibuprofen	positive	207.1380	Ibuprofen-D3		Others
Imidacloprid	positive	256.0596	Imidacloprid D4		Others
Indomethacin	positive	358.0841	Indomethacin-D4		Others
Iprovalicarb	positive	321.2173	Terbutylazine-D5		Carbamate
Irgarol	positive	254.1434	Irgarol-D9		Thioether
Isoproturon	positive	207.1491	Isoproturon-D6		Phenylurea
Ketoprofen	positive	255.1016	Atrazine-D5		Others
Kresoxim-methyl	positive	314.1387	Diclofenac-D4		Ester
Levetiracetam	positive	171.1128	Levetiracetam-D3		Primary amide
Lovastatin	positive	405.2636	Fenofibrate-D6		Ester

Mecoprop	negative	213.0324	Mecoprop-D6		Ether
Metalaxyl	positive	280.1543	Bicalutamide-D4		Ester
Metolachlor	positive	284.1412	Metolachlor-D6		chloroacetanilide
Metoxuron	positive	229.0738	Carbamazepin-10-11-epoxid-13C-D2		Phenylurea
Monuron	positive	199.0633	Atrazine-D5		Phenylurea
N,N-dimethyl-4-chlorobenzamide (MMcIB)	positive	184.0524	Clotrimazole-D5		Tertiary amide
Napropamide	positive	272.1645	Terbutylazine-D5		Tertiary amide
Naproxen	positive	231.1016	Naproxen-d3		Others
N-butyl-N-ethyl-4-chlorobenzamide (BEcIB)	positive	240.1150	Terbutylazine-D5		Tertiary amide
N,N-diethyl-3-methylbenzamide (DEET)	positive	192.1383	DEET-D10		Tertiary amide
Oseltamivir	positive	313.2122	Clopidogrel-(+/-)-D4		Ester
Pargyline	positive	160.1126	Diazinon-D10		Amine
Perindopril	positive	369.2388	Atomoxetine-D3		Others
Pheniramine	positive	241.1699	Levetiracetam-D3		amine
Propachlor	positive	212.0837	Atrazine-D5		Chloroacetanilide
Propranolol	positive	260.1645	Citalopram-D6		Others
Propyzamide	positive	256.0291	Terbutylazine-D5		Secondary amide

Ranitidine	positive	315.1485	Ranitidine-D6		Thioether
Rufinamide	positive	239.0739	Clothianidine-D3		Primary amide
Simeton	positive	198.1349	Sulfamethoxazole-D4		Triazine
Sulfadiazine	positive	251.0597	Sulfadiazine-D4		Sulfonamide
Sulfamethazine	positive	279.0910	Sulfamethazine-13C6		Sulfonamide
Sulfamethoxazole	positive	254.0594	Sulfamethoxazole-D4		Sulfonamide
Sulfapyridine	positive	250.0645	Sulfapyridine-D4		Sulfonamide
Sulfathiazole	positive	256.0209	Sulfathiazole-D4		Sulfonamide
Tebufenozide	positive	353.2224	Terbutylazine-D5		Secondary amide
Tebutam	positive	234.1852	Tebutam-D4		Tertiary amide
Terbutryn	positive	242.1434	Chlortoluron-D6		Thioether
Terbutylazine	positive	230.1167	Terbutylazine-D5		Triazine
Thiacloprid	positive	253.0309	Morphine-D3		Amidine
Ticlopidine	positive	264.0608	Pirimicarb D6		Others
Trimethoprim	positive	291.1452	Trimethoprim-D9		Others
Trinexapac-ethyl	positive	253.1071	Diuron-D6		Ester

Valsartan	positive	436.2343	Valsartan- ¹³ C5- ¹⁵ N		Tertiary amide
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Table S2 Ammonia utilization rate (AUR) in inhibitor-treated and untreated control reactors

Reactor	0h-AUR (mgL ⁻¹ h ⁻¹)	70h-AUR (mgL ⁻¹ h ⁻¹)
Ctrl	10	6.15
ATU	0	0
OCT	0	0.7