Quantitative occurrence of antibiotic resistance genes among bacterial populations from wastewater treatment plants using activated sludge

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Table S1: Technical description of wastewater treatment plants (WWTPs) and physicochemical parameters of wastewater.

Sewage treatment technology	The number of treatment plan	HRT (d)	Capacity (m3/d)	TSS (mg/L)		BOD (mg O_2/L)		COD (mg O_2/L)		Type of incoming effluent
				UWW	TWW	UWW	TWW	UWW	TWW	
A. A_2O system,	I	3.17	3144	455.2±24.5	2.0±0.1	550±56	1.7±0.7	1.281±194	27±8	domestic sewage
	II	2	5200	378±28	2.2±0.2	381±125	2.6±1.1	1.002±26	35±0	domestic sewage +wastewater from food industry
B. mechanical-biological system	III	2.7	1279	478.4±38.2	6.7±0.4	387±86	3.5±0.7	1.051±40	41±9	domestic sewage +hospital sewage +wastewater from food industry
	IV	1.6	3361	389.8±16.3	9.0±0.8	249±101	3.9±2.4	713±179	28±6	domestic sewage
	V	2	4600	730.6±44.6	6.9±0.3	1,188±53	5.0±0.8	2.068±39	52±4	domestic sewage +wastewater from food industry
	VI	2	7100	482.4±24.5	3.9±0.4	615±21	5.5±0.7	1.421±338	77±25	domestic sewage +wastewater from food industry
	VII	1.5	190	458.3±27.4	4.9±0.2	402±156	11.5±2.1	887±283	45±23	domestic sewage
C. Sequencing Batch Reactors (SBR)	VIII	2.3	1188	709.1±24.5	107±5.8	591±91	8.7±8.0	1.351±40	48±24	domestic sewage
	IX	1.3	1200	306.4±14.2	10.2±0.7	444±158	2.8±0.6	968±20	21±4	domestic sewage
	X	1	300	371.2±14.1	22.4±1.2	553±201	8.8±7.9	1.227±135	72±10	domestic sewage
D. mechanical-biological system with elevated removal of nutrients	XI	1.5	582	470±67.2	12±3.8	535±63	7.3±0.6	2.141±501	63±4	domestic sewage
	XII	1	35000	550.6±24.5	5.0±0.2	620±75	4±0	1.061±93	44±7	domestic sewage +hospital sewage +wastewater from food industry
	XIII	1.2	1700	303.2±5.3	2±0.2	513±201	3.3±2.9	1051±73	36±15	domestic sewage +hospital sewage +wastewater from food industry

WWTP- waste water treatment plant, UWW- untreated wastewater, TWW- treated wastewater, HRT- Hydraulic Retention Time, TSS- Total Suspended Solids, BOD- Biochemical Oxygen Demand, COD- Chemical Oxygen Dema

Table S2: Quantitative PCR (qPCR) primers and conditions used in this study

Target gene	Primer sequence (5'-3')	Amplicon size (bp)	Annealing temperature in standard PCR (°C)	Reference
16S *r*RNA	CAATTTTCGTGTCCCCTTCG	450	58	Nadkarni et al. (2002)
	GTTAATGATAGTGTGTCGAAAC			
*uid*A	ATGGAATTTCGCCGATTTTGC	166	60	Heijnen and Medema (2006)
	ATTGTTTGCCTCCCTGCTGC			
bla_{TEM}	AGTGCTGCCATAACCATGAGTG	431	61	Kim et al. (2009)
	CTGACTCCCCGTCGTGTAGATA			
bla_{SHV}	GATGAACGCTTTCCCATGATG	214		
	CGCTGTTATCGCTCATGGTAA			
bla_{OXA}	ATTATCTACAGCAGCGCCAGTG	296		
	TGCATCCACGTCTTTGGTG			
bla_{CTX-M}	SCSATGTGCAGYACCAGTAA	544	55	Ruppé et al. (2009)
	CCGCRATATGRTTGGTGGTG			
$bla_{CTX-M-1}$	GGTTAAAAAATCACTGCGTC	864		
	TTGGTGACGATTTTAGCCGC			
$bla_{CTX-M-2}$	ATGATGACTCAGAGCATTCG	866		
	TGGGTTACGATTTTCGCCGC			
$bla_{CTX-M-9}$	ATGGTGACAAAGAGAGTGCA	864		
	CCCTTCGGCGATGATTCTC			
bla_{Amp-C}	AATGGGTTTTCTACGGTCTG	191		
	GGGCAGCAAATGTGGAGCAA			
bla_{VEB}	CGACTTCCATTTCCCGATGC	1000		
	GGACTCTGCAACAAATACGC			
bla_{CMY}	ATGATGAAAAAATCGTTATGC	1200		
	TTGTAGCTTTTCAAGAATGCGC			
tet(A)	GCTACATCCTGCTTGCCTTC	210	55	Ng et al. (2001)
	CATAGATCGCCGTGAAGAGG			
tet(C)	CTTGAGAGCCTTCAACCCAG	418		
	ATGGTCGTCATCTACCTGCC			
tet(L)	TCGTTAGCGTGCTGTCATTC	267		
	GTATCCCACCAATGTAGCCG			
tet(M)	GTGGACAAAGGTACAACGAG	406		
	CGGTAAAGTTCGTCACACAC			
tet(O)	AACTTAGGCATTCTGGCTCAC	515		
	TCCCACTGTTCCATATCGTCA			
*tet*A(P)	CTTGGATTGCGGAAGAAGAG	676		
	ATATGCCCATTTAACCACGC			
tet(X)	CAATAATTGGTGGTGGACCC	468		
	TTCTTACCTTGGACATCCCG			

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