



Supplement of

Occurrence of pharmaceuticals and risk assessment in urban groundwater

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Table S1. Minimum, maximum and mean concentration (ng/L) of pharmaceuticals in river water and groundwater. TPs are highlighted in bold. n.d = non detected; LOQ = Limit of quantification

Therapeutic Group	Substance	Concentration (ng/L)					
		Besòs River			Groundwater		
		Min.	Max.	Mean	Min.	Max.	Mean
Analgesic/Anti-inflammatory	6 α -methyl-prednisolone	n.d	<LOQ	0.07	n.d	43.12	7.05
	Acetaminophen	34.07	3484.45	903.65	2.09	16.43	7.65
	Codeina	9.49	46.19	27.66	n.d	<LOQ	0.01
	Diclofenac	<LOQ	1147.66	430.04	1.69	452.07	193.14
	4-Hydroxydiclofenac	n.d	<LOQ	0.08	n.d	48.22	13.22
	NO2-Diclofenac	<LOQ	<LOQ	0.16	n.d	<LOQ	0.09
	Indomethacin	n.d	10.01	3.57	n.d	3.77	0.16
	Ketoprofen	4.01	20.71	11.10	<LOQ	262.37	69.27
	Mefenamic Acid	n.d	<LOQ	0.06	n.d	1.05	0.17
	Naproxen	<LOQ	<LOQ	0.22	n.d	<LOQ	0.03
	Propyphenazone	2.35	7.35	4.15	3.21	49.42	7.80
Tramadol	64.61	563.50	356.76	0.90	19.22	8.30	
Antibiotics	Azithromycin	20.12	72.80	40.55		n.d	
	Ciprofloxacin	n.d	<LOQ	0.16		n.d	
	Chloramphenicol	0.76	2648.32	668.71		n.d	
	Clarithromycin	17.09	23.41	19.53	n.d	3.98	0.65
	Erythromycin		n.d			n.d	
	Florfenicol	31.47	99.85	54.88		n.d	
	Flumenquine	n.d	0.26	0.07	n.d	<LOQ	0.07
	Furazolidone		n.d			n.d	
	Lincomycin	25.00	61.79	41.59	2.91	81.43	30.19
	Metronidazole	14.93	38.66	26.68		n.d	
	Nalidixic acid	<LOQ	0.96	0.64	n.d	2.97	1.14
	Sulfadiazine	2.86	45.76	17.89	5.80	46.61	17.21
	Sulfamerazine		n.d		n.d	0.51	0.15
	Sulfamethazine	2.99	35.06	15.43	5.56	96.93	28.54
	Sulfathiazole	n.d	418.60	105.89	2.54	46.20	15.22
	Sulfamethizole		n.d		n.d	3.11	0.35

	Sulfamethoxazole	72.06	322.10	182.18	n.d	5.25	0.83
	4-Nitro Sulfamethoxazole		n.d		n.d	<LOQ	0.02
	N-acetyl sulfamethoxazole	20.39	79.99	49.54	n.d	2.77	0.22
	Sulfamethoxine		n.d		n.d	6.47	0.96
	Sulfapyridine	4.91	27.05	15.14	4.32	43.76	20.83
	Trimethoprim	43.67	91.43	59.87	n.d	98.33	6.79
Anti-hypertensives	Atenolol	177.13	428.75	271.97	0.14	2.39	1.19
	Carazolol		n.d			n.d	
	Diltiazem	10.43	510.79	152.22	n.d	0.47	0.02
	Furosemide	128.85	508.10	361.22	9.84	929.77	301.42
	Hydrochlorothiazide	962.80	2001.33	1435.32	<LOQ	1437.50	456.54
	Ibersartan	112.62	160.10	132.61	n.d	104.86	33.00
	Metoprolol	38.90	223.91	112.08	3.48	116.89	66.49
	Propranolol	21.29	30.44	24.91	n.d	7.61	1.46
	Sotalol	24.09	43.12	33.38	n.d	20.50	7.95
	Valsartan	1424.75	2657.68	2022.37	13.35	2762.71	762.49
	Valsartan acid	<LOQ	2166.70	952.73	1.84	888.71	366.80
	Verapamil		n.d		n.d	0.61	0.03
Contrast agents	Iohexol	3784.68	12551.78	7738.70	n.d	5229.18	647.70
	Iopamidol	6037.22	35279.77	22308.59	341.89	44471.71	12689.05
	Iopromide	n.d	2211.88	645.55	n.d	256.77	31.31
Lipid regulators	Bezafibrate	29.68	60.58	40.46	n.d	6.96	1.83
	Clofibric Acid	n.d	4.15	1.21	n.d	71.08	3.35
	Ezetimibe	n.d	<LOQ	0.06		n.d	
	Gemfibrozil	383.29	1017.23	791.69	<LOQ	815.06	220.87
	Rosuvastatin	n.d	<LOQ	0.15	n.d	4.32	0.73
Psychiatric Drugs	Alprazolam	8.90	13.22	10.57	6.49	11.43	9.18
	Amantadine	68.08	189.36	109.06	18.74	195.42	71.70
	Bromazepam		n.d			n.d	
	Carbamazepine	57.90	94.19	74.72	46.69	105.85	78.18
	Acridone	5.45	16.63	10.76	0.48	30.31	9.78
	10,11-epoxi carbamazepine	19.77	35.29	26.29	1.09	26.79	10.56
	Citalopram	31.30	70.38	48.93		n.d	

	Diazepam	6.56	14.08	9.28	3.93	16.20	8.40
	Gabapentin	1317.21	2620.29	1838.48	8.61	809.38	248.68
	Lamotrigine	243.83	534.67	378.41	178.44	802.96	397.19
	5-Desamino-5-oxo-lamotrigine	65.97	133.63	98.60	37.65	132.23	79.15
	Lamotrigine-N2-Oxide	3.07	8.28	4.72	2.40	15.94	7.59
	N-methyl lamotrigine	1.80	3.48	2.51	n.d	3.66	1.65
	Levomepromazine		n.d			n.d	
	Lorazepam	42.13	117.07	78.00	n.d	60.43	16.84
	Meprobamate		n.d		n.d	33.82	4.78
	Midazolam	<LOQ	1.61	0.76	n.d	0.43	0.12
	Oxazepam	n.d	55.61	27.10	n.d	32.28	8.79
	Paroxetine		n.d			n.d	
	Pentobarbital	n.d	11.03	3.28	n.d	805.08	35.07
	Phenytoin	19.88	74.34	37.88	4.79	72.47	21.15
	Pregabalin	418.47	797.68	593.10	<LOQ	120.46	29.95
	Primidone	<LOQ	179.14	105.50	n.d	141.47	57.85
	Sertraline	n.d	24.81	15.33	n.d	2.08	0.20
	Venlafaxine	252.47	355.86	297.43	<LOQ	4.94	1.05
	O-desmethylvenlafaxine	621.30	1012.97	820.21	2.74	659.78	216.59
	Zonisamide	<LOQ	<LOQ	0.56		n.d	
Other	Carisoprodol	n.d				n.d	
	Climbazole	17.29	31.34	23.20	n.d	24.46	6.68
	Crotamiton	<LOQ	0.79	0.58	<LOQ	1.68	0.70
	Fluconazole	44.87	103.10	74.81	16.75	87.29	55.20
	Fluticasone propionate		n.d			n.d	
	Hydroxychloroquine	n.d	15.91	6.02	n.d	0.45	0.03
	Hyoscine butylbromide	n.d	<LOQ	0.20	n.d	<LOQ	0.06
	Lidocaine	146.37	1235.29	445.60	18.16	329.94	136.31
	Oseltamivir		n.d		n.d	<LOQ	0.01
	Sitagliptin	412.79	761.21	544.75	n.d	0.83	0.03
	Warfarin	<LOQ	1.42	0.58	n.d	<LOQ	0.29