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Performance comparison between the specific and baseline prediction models of ecotoxicity for pharmaceuticals: Is a specific QSAR model inevitable?

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Table S1: The measured (the lowest observed value) and predicted toxicity data for pharmaceuticals used for performance comparison of Sangion model versus ECOSAR.

CASRN	Pharmaceutical	Test Species	EC50 or LC50, µg/L			hat value (hii)
			Measured	Predicted		
				ECOSAR	Sangion model	
50022	Dexamethasone	Daphnia magna	48300	317869	41851	0.0208
50066	Phenobarbital	Daphnia magna	1463106	406923	29190	0.0264
50248	Prednisolone	Daphnia magna	85000	550110	41414	0.0267
50657	Niclosamide	Daphnia magna	1.6	974	15202	0.0426
55630	Nitroglycerin	Daphnia magna	46000	277449	434599	0.0469
57921	Streptomycin	Daphnia magna	650000	4E+13	108845245	0.3304
60004	Edathamil	Daphnia magna	113000	1E+10	1693736	0.0751
60548	Tetracycline	Daphnia magna	340000	1E+8	460376	0.1281
65850	Benzoic acid	Daphnia magna	140000	6E+8	31996	0.0539
69534	Ampicillin	Daphnia magna	1000000	479481	377604	0.0425
103902	4-Acetamidophenol	Daphnia magna	4800	2157158	28645	0.0414
108189	Diisopropylammonium	Daphnia magna	187000	95217	18141	0.0353
109897	N-Ethylethanamine	Daphnia magna	164000	358354	11546	0.0353
138863	Cinene	Daphnia magna	28200	238	2675	0.0251
154212	Lincomycin	Daphnia magna	23180	5577733	1044017	0.0454
443481	Metronidazole	Daphnia magna	211000	4174426	13004	0.0553
657249	1,1-Dimethylbiguanide	Daphnia magna	64000	6E+8	211666	0.0771
15307865	Diclofenac	Daphnia magna	67000	41414	11317	0.0783
15687271	Ibuprofen	Daphnia magna	34100	27848	25425	0.0412
22204531	Naproxen	Daphnia magna	174000	121546	10383	0.0590
26787780	Amoxicillin	Daphnia magna	1000000	1294875	489531	0.0475

CASRN	Pharmaceutical	Test Species	EC50 or LC50, µg/L			hat value (hii)
			Measured	Predicted		
				ECOSAR	Sangion model	
49562289	Fenofibrate	Daphnia magna	50120	307	8356	0.0408
62571862	Captopril	Daphnia magna	100000	1007920	212734	0.0414
65277421	Ketoconazole	Daphnia magna	1510	1977	10408	0.0382
81103119	Clarithromycin	Daphnia magna	25720	34065	160613	0.0380
85721331	Ciprofloxacin	Daphnia magna	1100	8049567	77016	0.0345
117704253	Doramectin	Daphnia magna	0.0637	668	10172	0.0614
107153	Ethylenediammonium	Pimephales promelas	115700	87731734	2399244	0.0845
109897	N-Ethylethanamine	Pimephales promelas	855000	704446	264332	0.0677
138863	Cinene	Pimephales promelas	38500	323	22667	0.0366
552410	Paeonol	Pimephales promelas	54900	122773	3323	0.0454
55630	Nitroglycerin	Pseudokirchneriella subcapitata	400	171582	0.02	3.6987
58082	Caffeine	Pseudokirchneriella subcapitata	150000	1274314	9035	0.0924
65850	Benzoic acid	Pseudokirchneriella subcapitata	140000	518374	31996	0.0728
107153	Ethylenediammonium	Pseudokirchneriella subcapitata	151000	6674644	6990	0.5078
108189	Diisopropylammonium	Pseudokirchneriella subcapitata	20000	61933	55	1.3958
109897	N-Ethylethanamine	Pseudokirchneriella subcapitata	20000	169451	157	0.9826
128461	Dihydrostreptomycin	Pseudokirchneriella subcapitata	107	8E+11	318	0.1938
138863	Cinene	Pseudokirchneriella subcapitata	38500	522	22667	0.1009
15307865	Diclofenac	Pseudokirchneriella subcapitata	64800	41414	1939	0.0347
100986854	Levofloxacin	Pseudokirchneriella subcapitata	7400	4183702	6985	0.0580

CASRN, Chemical Abstract Service register number.

EC50, effect concentration for half tested species.

LC50, half lethal concentration.

Hat value (\hat{h}_{ii}) denotes that the leverage used to determine if a chemical is in the applicability domain of the QSAR specific model. The bold entries indicate those out of the model AD.

Table S2: The measured (the lowest observed value) and predicted toxicity data for pharmaceuticals used for performance comparison of Tugcu model versus ECOSAR.

CASRN	Pharmaceutical	Test Species	LC50, µg/L			hat value (hii)
			Measured	Predicted		
				ECOSAR	Tugcu model	
50180	Cyclophosphamide	Fish	2193148	1791429	7011	0.0912
50533	Chlorpromazine	Fish	9566	347	2098	0.0923
50657	Niclosamide	Fish	26	1355	5121	0.0776
53861	Indometacin	Fish	81920	2939	34758	0.0874
55630	Nitroglycerin	Fish	1380	511126	21568	0.1655
57625	Chlortetracycline	Fish	78900	1E+8	107598	0.1403
57636	Ethinyl estradiol	Fish	0.0012	3063	995	0.1053
57681	Sulfamethazine	Fish	100000	2989437	80526	0.1647
57921	Streptomycin	Fish	180000	1.7E+14	180	0.3355
58731	Diphenhydramine	Fish	51072	21291	11391	0.1023
60333	Linoleic acid	Fish	12000	26	1670	0.2497
61687	Mefenamic acid	Fish	8040	2253	7483	0.0730
65850	Benzoic acid	Fish	100000	1300781	19204	0.1648
67458	furazolidone	Fish	25000	1411133	16749	0.1925
79572	oxytetracycline	Fish	110100	8.8E+9	64526	0.1416
94097	Benzocaine	Fish	7200	206238	81278	0.0439
103902	4-Acetamidophenol	Fish	160000	4457745	180214	0.0562
107153	Ethylenediammonium	Fish	115700	87731734	21690	0.1170
108189	Diisopropylammonium	Fish	37000	173283	93544	0.1282
108736	Phloroglucinol	Fish	10824864	2067516	12333	0.2642
109897	N-Ethylethanamine	Fish	25000	704446	51989	0.0992

CASRN	Pharmaceutical	Test Species	LC50, µg/L			hat value (hii)
			Measured	Predicted		
				ECOSAR	Tugcu model	
127071	Hydroxyurea	Fish	3239943	1.3E+8	5607	0.1110
138863	Cinene	Fish	34000	323	725	0.2305
552410	Paeonol	Fish	54900	122773	23932	0.0818
738705	Trimethoprim	Fish	100000	3304140	1132	0.2855
768945	Amantadine	Fish	25000	51234	14158	0.1028
3778732	Isophosphamide	Fish	835485	1791429	9183	0.0960
14769734	Levamisole	Fish	250000	27955	14860	0.0584
17902237	Tegafur	Fish	6065121	10745844	113668	0.0751
25812300	Gemfibrozil	Fish	851	6728	5315	0.0959
26787780	Amoxicillin	Fish	132400	2507185	435045	0.2424
33125972	Etomidate	Fish	280	22526	34548	0.0432
51384511	Metoprolol	Fish	100000	413299	9921	0.0866
51481619	Cimetidine	Fish	100000	3956174	26743	0.1343
55268741	Praziquantel	Fish	13400	106814	230113	0.1060
73590586	Omeprazole	Fish	31088	15777	12941	0.1898
79617962	Sertraline	Fish	191	281	78	0.3313
79902639	Simvastatin	Fish	2680	467	6758	0.2161
86386734	Fluconazole	Fish	100000	9310569	3360	0.1127
100986854	Levofloxacin	Fish	100000	28067232	56494	0.0624
60004	Edathamil	Fish	41000	4.4E+10	2600301	0.3957
81103119	Clarithromycin	Fish	100000	53813	6808661	1.7992
114078	Erythromycin	Fish	349000	224235	586991	0.5641

CASRN, Chemical Abstract Service register number.

LC50, half lethal concentration.

Hat value (\hat{h}_{ii}) denotes that the leverage used to determine if a chemical is in the applicability domain (AD) of the QSAR specific model. The bold entries indicate those out of the model AD.

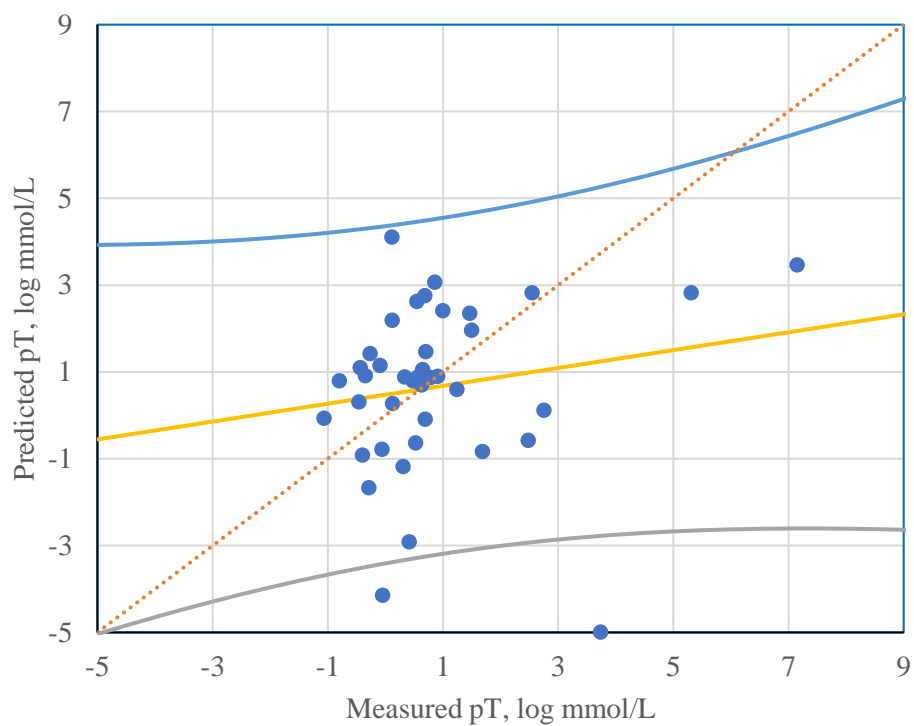


Figure S1: Measured toxicity versus the lowest model prediction of ECOSAR for pharmaceuticals used for performance comparison of Sangion modle versus ECOSAR. The best-fit linear regression and 95% prediction intervals are shown.

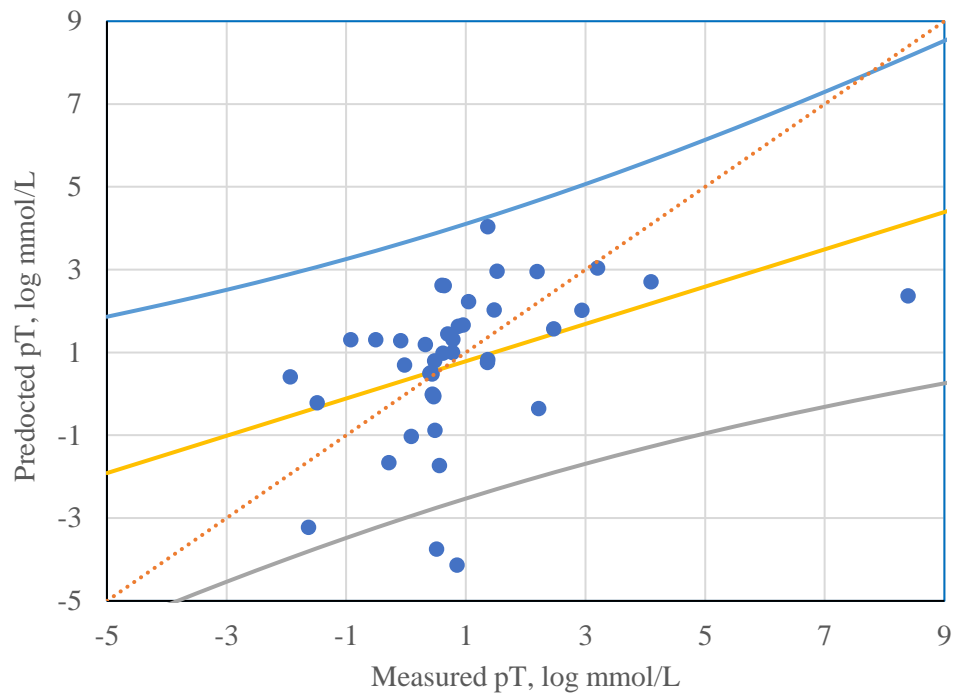


Figure S2: Measured toxicity versus the lowest model prediction of ECOSAR for pharmaceuticals used for performance comparison of Tugcu modle versus ECOSAR. The best-fit linear regression and 95% prediction intervals are shown.