Therapeutic ("normal"), toxic, and comatose-fatal blood-plasma concentrations (mg/L) in man

Substance	Blood-plasma concentration (mg/L)			$t_{½}$ (h)	Ref.
	therapeutic ("normal")	toxic (from)	comatose-fatal (from)		
Abacavir (ABC)	0.9-3.9[308]			appr. 1.5	[1,2]
Acamprosate	appr. 0.25-0.7[231]	1[311]		13-20[232]	[3], [4], [5]
Acebutolol[1]	0.2-2 (0.5-1.26)[1]		15-20	3-11	[6], [7], [8]
Acecainide	see (N-Acetyl-) Procainamide				
Acecarbromal(um)	10-20 (sum)	25-30			
Acemetacin	see Indomet(h)acin				
Acenocoumarol	0.03-0.1[197]	0.1-0.15		3-11	[9], [3], [10], [11]
Acetaldehyde	0-30	100-125			[10], [11]
Acetaminophen	see Paracetamol				
Acetazolamide	(4-) 10-20[267]	25-30		2-6 (-13)	[3], [12], [13], [14], [11]
Acetohexamide	20-70	500		1.3	[15]
Acetone	(2-) 5-20	100-400; 2000[8]	550	(6-)8-31	[11], [16], [17]
Acetonitrile			0.77	32	[11]
Acetyldigoxin	0.0005-0.0008[3]	0.0025-0.003	0.005	40-70	[18], [19], [20], [21], [22], [23], [24], [25], [26], [27]

Substance	Blood-plasma concentration (mg/L)			$t_{½}$ (h)	Ref.
	therapeutic ("normal")	toxic (from)	comatose-fatal (from)		
Acetylsalicylic acid (ASS, ASA)	20-200[2]	300-350[2]	(400-) 500[2]	3-20[2; 37]	[28], [29], [30], [31], [32], [33], [34]
Acitretin	appr. 0.01-0.05[112]			2-4[6]	[35], [36]
Acrivastine	-0.07			1-2	[8]
Acyclovir	0.4-1.5[203]			2-5[83]	[37], [3], [38], [39], [10]
Adalimumab (TNF-antibody)	appr. 5-9			14[6]	[40]
Adipiodone(-meglumine)	850-1200			0.5	[41]
Äthanol	see Ethanol			-[139]	
Agomelatine	0.007-0.3[310]	0.6[311]		1-2	[4]
Ajmaline	(0.1-) 0.53-2.21 (?)		5.5[8]	1.3-1.6, 5-6	[3], [42]
Albendazole	0.5-1.5[92]			8-9[92]	[43], [44], [45], [46]
Albuterol	see Salbutamol				
Alcuronium	0.3-3[353]			3.3±1.3	[47]
Aldrin	-0.0015	0.0035		50-167[6] (as dieldrin)	[11], [48]
Alendronate (Alendronic acid)	< 0.005[322]			-[6]	[49], [50], [51]
Alfentanil	0.03-0.6[4]			0.6-2.3[96]	[52], [53], [54], [55]
Alfuzosine	0.003-0.06			3-9	[8]

Substance	Blood-plasma concentration (mg/L)			$t_{½}$ (h)	Ref.
	therapeutic ("normal")	toxic (from)	comatose-fatal (from)		
Alimemazine (Trimeprazine)	0.05-0.4	0.5	1-3.2	8	[56], [57]
Alizapride	0.1-2			2-3	[15]
Allobarbital	2-5	10	20	40-48	[47], [11], [58]
Allopurinol[354]	2-19			0.5-3	[11]
Almotriptan	0.05-0.07			3-4	[47]
Alphaprodine	0.87-1			1.6-2.6	[11]
Alprazolam	0.005-0.05 (-0.08)[65]	0.1-0.4	[252]	6-20	[56], [3], [59], [60], [61], [62], [63]
Alprenolol[48]	0.025-0.14	1-2	40-48	2-7	[7]
4-Hydroxyalprenolol	0.04-0.06				[8]
Aluminium	< 0.005[234]	0.05-0.15	4.4[8]	appr. 0.5	[64], [65], [66], [11]
Amantadine	(0.06-) 0.2-0.6 (-1)	1; 2.4[8]	2.1-4.8; 21[8]	9-15	[48]
Amfebutamone	see Bupropion				
Amikacin	10-25[76]	30		2-3	[67]
Aminobenzoic acid	300-600	600			[66]
Aminoglutethimide	(0.05-) 7.5-25			10-15	[3], [8], [11]
Aminophenazone	10-20			appr. 2-4	[15]
4-Aminopyridine (Fampridine)	0.025-0.075	0.14[8]; 0.2		3-3.5	[68], [10], [11]

Substance	Blood-plasma concentration (mg/L)			$t_{½}$ (h)	Ref.
	therapeutic ("normal")	toxic (from)	comatose-fatal (from)		
5-Aminosalicylic acid (5-AS, 5-ASA)	see Mesalazine				
Amiodarone[261]	(0.5-) 1-2 (-2.5)	2.5-3		30-120[6]	[69], [64], [3], [70], [71]
Amisulpride	0.1-0.4	0.64[311]	9.3[8]; 41.7[8]	12-20	[4], [72], [15], [8]
Amitriptyline[7; 48]	0.05-0.3	0.5-0.6	1.5-2	30-50	[73], [74], [56], [75], [76], [77], [78], [79], [80], [81], [82], [83]
Amlodipine	0.003-0.015	0.088[8; 165]	0.1-0.2[8; 166]	34-50	[84], [85], [86]
Ammonia	0.5-1.7				[11]
Amobarbital	1-5	(5-6) 10-30	13-96	15-30	[87], [48]
Amodiaquine	-0.05[270]			-[270]	[88]
Amoxapine	0.18-0.6[151]	3	5	8	[9]
Amoxicillin	0.5-1 (5-15)			1-2	[15]
Amphetamine	0.02-0.1	0.2	0.5-1	4-8 (7-34)[344]	[89], [66]
Amphotericin B	(0.1-) 0.2-3	(3-) 5-10		24-48[110]	[47], [90], [91], [92], [93]
Ampicillin	0.02-2 (2-20)			1	[67]
Amrinone	1-2 (-4)			3-12	[3], [94], [95]
Amsacrine	(0.1-) 1-5.5			5-7	[96]

Substance	Blood-plasma concentration (mg/L)			$t_{½}$ (h)	Ref.
	therapeutic ("normal")	toxic (from)	comatose-fatal (from)		
Anileridine	< 0.5		0.9[8]		[11], [48]
Aniline	-0.02[328] (urine)	0.13[8; 355]	6	(2-) 3-4 (-7)	[11], [48], [97], [47], [98], [99]
Antimony	-0.01[329]	0.2			[64], [100]
Antipyrine	see Phenazone				
Apomorphine	0.002-0.02[204]			appr. 0.75	[3], [10]
Aprindine[48]	1-2	2-3		13-50	
Aprobarbital	4-20	30-40	50	14-34	[47], [11], [58]
Aripiprazole	0.15-0.5	1[311; 345]		60-80	[101], [4], [102]
Arsenic	0.002-0.07[283]	0.05-0.25	9-15		[103], [64], [87], [11], [100]
Asenapine	0.002-0.005	0.01[311]		24	[4]
Articaine	< 1.5-2 (?)			0.3 (-1)	[104]
Ascorbic acid (Vitamin C)	4-15			-[6]	[105], [3], [106], [107],[108]
Astemizole	0.002-0.05[43]	14[8]		appr. 20[6; 42; 43]	[47], [3], [109]
Atazanavir (ATV)	> 0.15[293]			6.5-8.6	[110], [2], [111]

Substance	Blood-plasma concentration (mg/L)			$t_{½}$ (h)	Ref.
	therapeutic ("normal")	toxic (from)	comatose-fatal (from)		
Atenolol	0.1-1 (-2)[77]	2-3	27[8]	4-14[9]	[3], [42], [7], [112], [64]
Atomoxetine	0.2-1[317]	2[311]		appr. 4[356]	[4]
Atovaquone	13.9 ± 6.9 (> 15)			2-3[6]	[113]
Atracurium(besylate)	0.1-0.5 (-5)			appr. 0.5	
Atropine	0.002-0.025[155]	0.03-0.1	0.2	2-6.5, 13-38	[66], [114], [11]
Azapropazone (Apazone)	40-90			8-24	
Azathioprine[10]	0.05-2			1-4[11]	
Azelastine	0.002-0.003(-0.01)			22-25	[15]
Azithromycin	appr. 0.04-1			50-60 (2-4[6])	[115], [116], [117], [118], [119]
Aztreonam	1-10 (50-250)			1.5-2	[11]
Baclofen	0.08-0.4 (-0.6)	1.1-3.5	6-9.6	6.8±0.7	[47], [9], [11]
Bambuterol	see Terbutaline				
Barbexaclone	active metabolite = phenobarbital (see Table)				[12]
Barbital	2-20	20-50	50	57-120	
Barium	-0.001			10-18	[47]
Bendrofluazide	0.05-0.1			appr. 3	[42]

Substance	Blood-plasma concentration (mg/L)			$t_{½}$ (h)	Ref.
	therapeutic ("normal")	toxic (from)	comatose-fatal (from)		
Benoxaprofen	-50			19-39	[3]
Benperidol	0.001-0.01	0.02[311]		4-8	[4], [15], [8]
Benzbromarone	2-10			2-4	
Benzene	-0.0002[271]		0.95	9-24	[47], [58]
Benzonatate		2.5		appr. 1-3	[8]
Benzoylecgonine[357]	-0.1		1	4-5	[8]
Benzphetamine	0.025-0.5	0.5	14[8]		[47], [8], [11]
Benztropine	0.01-0.18	0.05	0.2-0.7		[15], [8], [11]
Benzyl alcohol		18[8, 194]		-[195]	[3], [120], [121]
Benzylpenicillin	1.2-12			1	[67], [41]
Bepridil	0.6-2.5			33-42 (30-130)	[122], [8]
Beryllium	-0.0003				[58]
Betacarotene	4-6[196]				[123], [124]
Betaxolol	0.005-0.05		36[8]	14-22	[47], [125], [7]
Bethanidine	0.02-0.5			9-10	[3], [58]
Bevantolol	0.2-2			2	[15], [8]
Bezafibrate	-15			2	[3]

Substance	Blood-plasma concentration (mg/L)			$t_{½}$ (h)	Ref.
	therapeutic ("normal")	toxic (from)	comatose-fatal (from)		
Bicalutamide	1.5-17.5 (-25)[163]			(3-) 7-10[6]	[126]
Biperiden	0.05-0.1?		0.25[8]	18-24	[56]
Bismut(h)	< 0.05 (-0.1)	0.05-0.1		-[6]	[47], [64]
Bisoprolol	0.01-0.1			10-12	[7]
Bopindolol	0.001-0.015[54]			4-8[54]	[7]
Borate	0-7	20	200	12-27	[47], [66]
Boron	0.8-6	20-50	50-150		[58]
Bornaprine	0.0007-0.0072[313]	0.014[311]		appr. 30	[4]
Brallobarbital (Brallobarbitone)	4-8	8-10	15	20-40	
Bretylium	0.8-2.4			6-11	[3]
Brodifacoum		0.02	0.03-0.17; acute: 3.9[8]	20-60[6]	[58], [127]
Bromadiolon		0.02		3-6[6] (early), 10-24[6] (late phase)	[11], [58]
Bromazepam	(0.05-) 0.08-0.2	0.3-0.4	(1-) 2	8-22	[59]
Bromide	75-100 (-300)	500-1500; 3000[8; 242]	2000	12-13[6]	[58], [128], [129], [130]
Bromisoval	10-20	30-40		appr. 4[28, 105]	
Bromocriptine	0.0001-0.0003 (-0.004)[314]	0.008[311]		appr. 38	[4]
Bromoxynil		20			[58]

Substance	Blood-plasma concentration (mg/L)			$t_{½}$ (h)	Ref.
	therapeutic ("normal")	toxic (from)	comatose-fatal (from)		
Bromperidol	0.012-0.02	0.03[311]		20-36	
Brompheniramine	0.005-0.015	0.2[8]		2-10 (-20)	[15]
Brotizolam	0.001-0.01 (-0.02)	0.02[311]	0.01-0.03[8]	4-10	[47], [131]
Budipine	appr. 0.1-0.3			30	[15]
Buflomedil	appr. 0.2-0.5 (-1.0)	15-25	25-50; 275[8]	2-4	[42], [11], [58]
Bunitrolol	0.001-0.015			2-6	[7]
Bupivacaine	(0.25-) 0.5-1.5 (-2)	2-4		0.5-3	[123], [132], [133], [134]
Bupranolol	-[44]			2-4	[7]
Buprenorphine[340]	0.0005-0.005 (-0.01)[285]	0.03-0.1[339]	0.008-0.029	3-5 (i.v.); 18-49 (sublingual); appr. 19 (buccal)	[47], [135], [123], [136], [137], [138], [139], [140], [141]
Bupropion (Amfebutamone)	0.01-0.02; 0.05-0.1[152]	1.2-2[246]	4[8]; 4.2[8]; 7.3[8]	(4-) 10-20	[47], [142], [143], [4], [144], [145], [146], [80], [147], [148]
Buspirone[312]	0.001-0.004	0.008[311]		2-3	[4]
Busulfan	> 0.9[291]			2-4	[149], [150], [151], [152], [153], [154]
Butabarbital	see Secbutabarbital				

Substance	Blood-plasma concentration (mg/L)			$t_{½}$ (h)	Ref.
	therapeutic ("normal")	toxic (from)	comatose-fatal (from)		
Butalbital	1-5	10-15	15-30	30-40	[58]
Butanone	-10	500			
Butaperazine	0.02-0.3 (-0.7)			12	[15]
Butorphanol	0.0006-0.002			4-9	[15], [8]
Butriptyline	0.07-0.15	0.4-0.5			[15]
Butylscopolamine	-0.7			4-5	[8]
Cabergoline	58-144 pg/mL[315]	390 pg/mL[311]		63-68	[4]
Cadmium	<0.0003-0.0065	0.015-0.05		appr. 16 years	[47], [58], [100]
Caffeine (Coffein)	(2-) 4-10	15-20	80-180	2-10	[47], [123], [155], [156], [157], [64]
Calcifediol	0.01-0.05				[66]
Camazepam	0.1-0.6	2		20-24	[59]
Camphor		0.3-0.4	1.7	2-8	[47], [15], [8], [158]
Candesartan	0.08-0.18			5-7	[15]
Canrenone	see Spironolactone				
Captopril	0.05-0.5 (-1)	5-6	60	1-2	[159], [84], [42]

Substance	Blood-plasma concentration (mg/L)			$t_{½}$ (h)	Ref.
	therapeutic ("normal")	toxic (from)	comatose-fatal (from)		
Carazolol[23]	-0.015			9	[7]
Carbachol	appr. 0.01?		3.6[8; 287]		[3], [160]
Carbamazepine[12]	2-8 (4-12)	10	20	12-60 (7-35)[140]	[161], [162], [56], [163], [164], [165], [166], [12]
Carbaryl		5	6-27		[47], [167]
Carbenoxolone	appr. 5-30			8-20	[66]
Carbidopa	0.02-0.2[316]	0.4[311; 316]		2	[4]
Carbimazole	0.5-3.4[95]			3-6[95]	
Carbinoxamine	appr. 0.02-0.04			appr. 10-15	[168]
Carboc(h)romene	0.8-2.4 (-3)			0.2-1.5	
Carbon monoxide	-[200]	25-30 %	50-60 %		[123], [10], [58]
Carbon tetrachloride	-0.07	0.12[8] ; 7.1[8 ; 269] ; 11[8] ; 10-50	100-200	Appr. 24 ; 42.6[8]	[169], [58], [170], [171], [172], [173]
Carboplatin	max. 10-25			2.5-6[106]	
Carbromal(um)[13]	2-10	15-20	40	7-15	
Carisoprodol	10-30	40; 30-50[104]	50[8]; 110[104]	8	[56], [58]
ß-Carotine	see Betacarotene				

Substance	Blood-plasma concentration (mg/L)			$t_{½}$ (h)	Ref.
	therapeutic ("normal")	toxic (from)	comatose-fatal (from)		
Carteolol	0.01-0.1			3-7	[7]
Carvedilol	appr. 0.02-0.15 (-0.3)			6-10	[3], [95], [8]
Cathine	appr. 0.71[370]			3-8	[47]
Cefaclor	13-35 (i.v. -900)			0.5-1 (-2)	[3], [8], [11]
Cefadroxil	-30			1-2	[8]
Cefalexin	-65			1-1.5	[41]
Cefaloridine	20-80			1.5	[41]
Cefalotin	See Cephalotin				
Cefamandole	1-5 (10-40-150)			0.5-1.2	[41], [58]
Cefazolin	-150			1.5-2	[67], [41]
Cefdinir	-4			16	[8]
Cefepime	-160			2	[8]
Cefetamet	-7			2-3	[8]
Cefixime	-7			3-4	[8]
Cefmenoxime	-200			1-2	[8]
Cefodizime	-400			2-4	[8]
Cefoperazone	-250			1-2 (-5)	[174]
Cefotaxime	0.5-2 (10-50; i.v. -225)			1-1.5	[67]

Substance	Blood-plasma concentration (mg/L)			$t_{½}$ (h)	Ref.
	therapeutic ("normal")	toxic (from)	comatose-fatal (from)		
Cefotetan	65-90			3.5	[41]
Cefotiam	-150[71]			0.7-1.5 (-2)	[41], [175]
Cefoxitin	-150			0.7-1	[41]
Cefpodoxime	-7			2-3	[8]
Cefsulodin	20-100			1.6-1.9	[3], [8], [11]
Ceftazidime	20-40 (50-200)			1-4	[3], [8], [11]
Ceftibuten	appr. 3-20			2-4	
Ceftizoxime	40-160			6-9	[41]
Ceftriaxone	15-75			6.5-8.5	[67]
Cefuroxime	0.5-1 (10-60 ; i.v. -180)[243]			1.1-1.3	[3], [176], [177], [10], [58]
Celecoxib[48]	0.36-0.8[371]			11-16	[47]
Celiprolol	0.05-0.5 (-1)			3-6	[58]
Cephalothin (Cefalotin)	-30			0.5-0.6	[3], [41]
Cerivastatin	0.002-0.04			1.5-3	[15], [8]
Cetirizine	appr. 0.02-0.3	2-5		7-9	[47], [15], [8]
Chinidine	see Quinidine				
Chinine	see Quinine				

Substance	Blood-plasma concentration (mg/L)			$t_{½}$ (h)	Ref.
	therapeutic ("normal")	toxic (from)	comatose-fatal (from)		
Chloralhydrate[14]	1.5-15	40-50	60-100	8-30	
Chlorambucil	0.15-0.3 (-1.0)			1.5-3	[15]
Chloramphenicol	5-10 (-15)[59]	25		2-6	[178], [11], [58]
Chlordane	-0.001	0.0025	1-7	88[6]	[11], [58]
Chlordecone		0.5		63-148[6]	[47]
Chlordiazepoxide[15]	0.4-3	3.5-10 (-15); 20.5[8]	20[8]; 26[8]	6-27	[179], [47], [56], [180], [11], [58]
Chlormethiazole	see Clomethiazole				
Chlormezanone	(3-) 5-9 (-14)	appr. 20	18[8]; 53[8]	20-30	[43], [56], [181]
Chlorobutanol		75			[66]
Chloroform	20-50	appr. 70	33[8]; 64[8]; 69[8]; 91[8]	1.5	[47], [11], [58], [182]
Chlorophacinone		0.1		6-23[6]	
Chloroquine	0.02-0.5	1	3	dose-dependent[6]	[183], [56], [30]
Chlorothiazide	appr. 6			0.5-2	[3], [11], [58]
Chlorphen(ir)amine	0.003-0.017		1.1[8]	(12-) 15-25 (-43)[358]	[47], [3], [11], [58]
Chlorpromazine[66]	0.03-0.1 (-0.5)	1-2	3-4	10-30	[56], [3], [184],

Substance	Blood-plasma concentration (mg/L)			$t_{½}$ (h)	Ref.
	therapeutic ("normal")	toxic (from)	comatose-fatal (from)		
					[185]
Chlorpropamide	30-150	200-750		25-60	[66], [58]
Chlorprothixene	0.02-0.3	0.4	0.8	8-12	[47], [4]
Chlorpyrifos		0.2	1.3 (0.4-3.5)[276]	27	[47], [186]
Chlortalidone	0.15-0.3 (-1.4)	appr. 2		44-48 (35-70)	[47]
Chlortetracycline	1-5 (-10)	30		5-6	[9], [13], [14]
Chromium	-0.00035		32[8]	3-4 years	[47]
Cibenzoline	0.2-0.4 (-0.9)	(0.5-) 1		7-8[83]	[3], [187]
Cicletanine	appr. 1-2			5-23	[3], [8]
Ciclosporine A (CsA)	< 0.1-0.15-0.25	0.3-0.4[16]		10-27[169]	[188], [189], [190], [191], [192], [193]
Cidofovir	appr. 7-43			2.5	[8], [3]
Cilazapril(-)at	0.003-0.09			30-50	[8]
Cimetidine	0.25-3 (0.75-4)	30-50	110[8]	1.5-4	[194], [195]
Cinnarizine	0.04-0.33	7.4[8]		12-34	[47]
Cinoxacin	appr. 15			1.5-4	
Ciprofloxacin	2.5-4	11.5[8]		3-6	[196], [197], [198], [199]
Cisaprid	0.04-0.08			6-12	[8]

Substance	Blood-plasma concentration (mg/L)			$t_{½}$ (h)	Ref.
	therapeutic ("normal")	toxic (from)	comatose-fatal (from)		
Citalopram	0.05- 0.11	0.22[311]	5-6[160]	appr. 33[170]	[8], [200], [201], [202], [4], [203], [204], [205],[206], [207]
Cladribine	appr. 0.006			0.1-0.2 (6.4-19.7)	[208], [209], [210]
Clarithromycin	appr. 0.2-2			3-7[217]	[115], [211], [8], [118], [212], [213]
Clemastine	appr. 0.001-0.002 (?)			appr. 8	[8], [214]
Clenbuterol	0.0003-0.0006	0.003[8]		30-35	[47]
Clindamycin	appr. 0.5			2-3	
Clobazam[17]	0.03-0.3	0.5[311]		18-42	[47], [4], [59], [215]
Clobutinol	appr. 0.05-0.2			23-34	[3], [8]
Clodronate (Clodronic acid)				-[6]	[49]
Clofibrate	50-250			10-18	
Clomethiazole (Chlormethiazole)	0.1-5	(2.8-) 4-15	50	3-7	[3], [4], [216], [9], [13],[217]
Clomipramine[48, 85]	(0.02-) 0.09-0.25 (-0.4)[226]	0.4-0.6	1-2	20-26[86]	[218], [219], [220], [76], [221], [222], [80], [223]

Substance	Blood-plasma concentration (mg/L)			$t_{½}$ (h)	Ref.
	therapeutic ("normal")	toxic (from)	comatose-fatal (from)		
Clonazepam	(0.004-) 0.02-0.08[150]	0.1		20-60	[161], [60], [224]
Clonidine	0.001-0.002 (-0.004)	0.025-0.05 (0.009[8])	0.23[8]	5-20	[47], [225], [226], [227]
Clopenthixol	0.002-0.015	0.1-0.3		15-25	[8], [11]
Clopidogrel	0.001-0.006			1.4-3.6	[47]
Clorazepate[15]	see Nordazepam			1-2	[164]
Clotiazepam	0.1-0.7			3-15	
Cloxacillin	5-30 (-85)			0.5-1 (0.3-2)	
Clozapine[136]	(0.1-) 0.35-0.6 (>0.35 ?)	0.6-1 (9.5[8])	1.2[8]; 2[8]; 5.2[8]	6-14	[101], [228], [229], [230], [231], [232], [233], [234], [72], [235], [236], [237], [238], [239], [240]
Cobalt	0.0001-0.0022			2 (early); 38 (late phase)	[47], [11], [58]
Cocaine	0.05-0.3	(0.25-) 0.5-1	0.9-2.1	0.5-1[18]	[47], [241], [242], [13], [14], [58]
Codeine[48]	0.03-0.25	0.5-1[339]	1.8	3-4	[3], [243], [244]
Coffein(e)	see Caffeine				

Substance	Blood-plasma concentration (mg/L)			$t_{½}$ (h)	Ref.
	therapeutic ("normal")	toxic (from)	comatose-fatal (from)		
Colchicine	0.0003-0.0025	0.005 (0.019[8])	0.009[8]; 0.024[8]	11-32[143]	[245], [246], [247], [248], [10]
Colistin	1-5			2-5	
Copper	0.6-1.5	2	5	26[6]	[66]
Cotrimoxazole	see Sulfamethoxazole and Trimethoprim				
Coumatetralyl		0.12[8]			[249]
Cresol (Methylphenols)		appr. 50	120		[58]
Cromolyn (Cromoglycate)	appr. -0.01			1-1.5	[3]
Cyanide	-[177]	0.5	1-3	appr. 19[184]	[3], [250], [251], [252], [253], [254], [255], [130], [256]
Cyclizine	0.1-0.25	0.75-1	15	24	[11], [58]
Cyclobarbital	2-6	10	20	8-17	
Cyclobenzaprine	appr. 0.003-0.04	0.4		18 (9-40)[253]	[11], [58], [257]
Cyclohexane	-0.4				
Cyclophosphamide	10-25			4-8 (1.3-16)	[3], [8]
Cyclopropane	80-180				[11], [58]

Substance	Blood-plasma concentration (mg/L)			$t_{½}$ (h)	Ref.
	therapeutic ("normal")	toxic (from)	comatose-fatal (from)		
Cyclosporine	see Ciclosporine				
Cyproheptadine	appr. -0.05		0.47[8]	8-9	[47], [3]
Cyproterone acetate				30-40	[126]
Cysteamine	appr. > 20 µmol/L[282]			appr. 1	[258], [3]
Cytarabine	0.05-0.5			0.1-0.2 (1.9-2.5)	[209], [9]
2,4-D	see 2,4-Dichloro-phenoxyacetic acid				
Danazol	appr. -0.2			4.5	[3]
Dantrolene	(0.1-) 0.4-1.5 (-3)			4-12	[9], [3], [259]
Dapsone[48]	0.5-2	10	18[8]	25-31	[260], [261]
Darunavir (DRV)	> 3.3 (1.255-7.368)[301]			appr. 15	[262], [110], [2]
DEET	see N,N-Diethyl-3-methylbenzamide				
Deferoxamine (Desferrioxamine)	3-15			4-6	
Demoxepam	0.5-0.74	1	2.7		[66]
Desipramine [48, 69]	0.01-0.5 (0.12-0.25)	0.5-1	3	15-25[70]	[74], [263], [78], [79], [80], [264]
Desloratadine[372]	0.002-0.006[373]			17-27	[47]

Substance	Blood-plasma concentration (mg/L)			$t_{½}$ (h)	Ref.
	therapeutic ("normal")	toxic (from)	comatose-fatal (from)		
Desmethyldiazepam (N-Desmethyldiazepam)	see Nordazepam				[59]
Desvenlafaxine	0.1-0.4	0.6[311]		11	[4]
Detajmium	0.01-0.7		1.8[8]	13-14	[8]
Dexamethasone	appr. 0.05-0.265[247]			2.5-9.5	[3], [265]
Dexfenfluramine[351]	appr. 0.03-0.06	0.15-0.25		appr. 18	[66], [11], [58]
Dexketoprofen[374]	appr. 3.7			0.5-2	[47]
Dexmethylphenidate[342]	0.013-0.023[318]	0.044[311; 318]		appr. 2	[4]
Dextromethorphan[48]	0.01-0.04	0.1	3	2-4	[266], [267], [268], [269] [270]
Dextromoramide[350]	0.075-0.15	0.2[339]	0.9	1.5-4-7	[47], [271], [8], [272], [58]
Dextropropoxyphene[305]	0.05-0.3 (-0.5)	0.6-1	1-2	10-30	[30], [48]
Diacetylmorphine or Diamorphine (DAM)	see Heroin (and Morphine)			2-5 min	[273], [274], [275], [276], [277], [278], [279], [280], [281]
3,4-Diaminopyridin (DAP)	< 0.04[213]	0.1 (?)		0.3-2[214]	[282]
Diazepam[19]	0.1-2 (-2.5)	3-5		24-48	[241], [283], [284], [3], [285], [59], [224], [13], [14], [286]

Substance	Blood-plasma concentration (mg/L)			$t_{½}$ (h)	Ref.
	therapeutic ("normal")	toxic (from)	comatose-fatal (from)		
Diazinon		0.05-0.1 (-0.5)			[58]
Diazoxide	10-20 (-50)	50 (-100)		20-36 (-48)	[3], [84], [42], [10], [58]
Dibenzepine	0.025-0.15 (0.1-0.5)	3[359]	18[359]	3.5-5	[11], [58]
Dichloromethane		200	280	0.6 (early); 4-8 (late phase)	[47]
2,4-Dichlorophenoxyacetic acid (2,4-D)	-	appr. 100	200; 392[8]; 720[8]	appr. 18[182]	[3], [11], [58]
Dichlorvos			29	0.16	[47]
Diciclomine	see Dicyclomine				[8]
Diclofenac	0.5-3	50; 60[8]		1-2	[287], [288], [289]
Dicoumarol	8-30	40-50		1-4[6]	[8], [11]
Dicyclomine (Dicycloverin)	-0.1	appr. 0.2	0.5	1.8-2	[8]
Didanosine (DDI)	appr. 1-30 µmol/L			appr. 1.4	[290], [291], [38], [2], [3]
Dieldrin	-0.0015	0.15-0.3		2-12 months	[47], [11], [58]
Diethylcarbamazine	> 0.8-1.0			4-15	[292]
Diethylene glycol	-	200-500	2000	3-4	[47]
N,N-Diethyl-3-methylbenzamide (N,N-Diethyl-m-toluamide; DEET)	-	>1 mmol/L		appr. 2.5	
Diethylpentenamide (Valdetamide)	2-10	20	45	6-7	

Substance	Blood-plasma concentration (mg/L)			$t_{½}$ (h)	Ref.
	therapeutic ("normal")	toxic (from)	comatose-fatal (from)		
Diethylpropion	0.003-0.007 (-0.2)	2	5.4[8]	4-8[23]	[3], [8], [58]
Difenacoum		0.5		11-42[6]	[47]
Diflunisal	40-100 (-200)	300-500	600	5-12[83]	[3], [9], [58], [293]
Digitoxin	0.01-0.025	0.03	0.04	140-200	[294], [295]
Digoxin	0.0005-0.0008 (-0.002)	0.0025-0.003	0.005	40-70	[18], [19], [20], [21], [22], [23], [24], [25], [26], [27]
Dihydralazine	see Hydralazine				
Dihydrocodeine	0.03-0.25	0.5-1[339]	2	3-4	[14], [58]
Dihydroergotamine	0.001-0.01			7-9 (> 30?)	[3], [8]
Diltiazem	0.03-0.13 (-0.25)[157]	0.8-1	2-6; 7[8]; 8[8]	2-6 (4-9)	[3], [84], [58]
Dimenhydrinate	see Diphenhydramine				
Dimethadione[360]	(350-) 700-1000	1000		5-10[6]	[3], [8], [12], [11]
Dimethindene	0.01-0.05			appr. 6	[3], [15], [8]
Dimethoate			355.5 (160-674)[277]		[186]
N,N-Dimethyltryptamine	0.001-0.1				[58]
4,6-Dinitro-2-methylphenol		40			
Dinitro-O-cresol (DNOC)	1-5	30-60	75		[58]

Substance	Blood-plasma concentration (mg/L)			$t_{½}$ (h)	Ref.
	therapeutic ("normal")	toxic (from)	comatose-fatal (from)		
Diphenhydramine	0.05-0.1 (-1)	1-2(-4)	5-10	4-10, 20-60	[296], [297], [114], [58]
Diphenoxylate	appr. 0.01			2-3	
Dipipanone	appr. -0.05	0.2			
Diprophylline	see Dyphylline				
Dipyridamole	0.1-1.5	4		11-13	[9], [13], [14]
Dipyrone	see Metamizole				
Diquat		0.1-0.4			[11]
Disopyramide	2-7[78]	8		5-8	[70], [11], [58], [64]
Disulfiram	0.05-0.4	0.5[311] ; 5	8	appr. 5-7	
Dixyrazine	appr. 0.3[249]		5.5[8]; 9.4[8]		[4], [298]
Domperidone	appr. 0.01-0.1			12-16	[3], [299], [300], [301], [302]
Donepezil[207]	appr. 0.03-0.075	0.075[311]		70-100	[4], [303], [304]
Dothiepin (Dosulepin)[20]	0.02-0.1	(0.3-) 0.8	1	11-40	[305], [306]
Doxacurium	0.01-0.3			1-2[83]	
Doxapram	(1.5-) 2-5	9[268]		2.4-9.9	[307], [3], [11], [58]

Substance	Blood-plasma concentration (mg/L)			$t_{½}$ (h)	Ref.
	therapeutic ("normal")	toxic (from)	comatose-fatal (from)		
Doxazosin	0.01-0.15			10-22	[95]
Doxepin[21]	0.01-0.2 (0.03-0.1)	0.5-1	2-4	8-25	[308], [73], [309], [77], [310], [80], [264]
Doxorubicin (Adriamycin)	0.006-0.02			20-48	[3], [8], [58]
Doxycycline	1-5 (-10)	30		7-20	
Doxylamine[289]	0.05-0.2	1-2	5	9-11	[47], [311], [87]
Dronabinol (Delta-9-tetrahydrocannabinol, THC)	0.005-0.01 (-0.05)[137]			50-100	[241], [312], [313]
Droperidol	appr. -0.05			1.5-2.5[237]	[3], [314]
Drotrecogin alfa	mean 0.072			1.6	[315]
Duloxetine	0.03-0.12	0.24[311]		9-19	[4], [223]
Dyphylline	6.5-14 (-20)	40		2	[11], [58]
Edrophonium	0.15-0.2	appr. 0.15		1.3-2.4	[3], [316], [58]
Efavirenz (EFV)	> 1.0[297]			40-55	[110], [2], [111]
Eletriptan	0.06-0.23			3-7	[47]
Enfuvirtide	2.6-3.4			3-4	
Emetine	0.005-0.075	0.5	2.4[8]	24-48	[8]

Substance	Blood-plasma concentration (mg/L)			$t_{½}$ (h)	Ref.
	therapeutic ("normal")	toxic (from)	comatose-fatal (from)		
Enalapril[52]	0.01-0.05 (-0.1)			8-11	[159], [84]
Encainide[48]	-[175]			1.5-3.5[176]	[3]
Endrin	-0.003	0.01-0.03			[58]
Enoxacin	1-4			3-6	[93]
Enoximone	≥ 0.2 (3-4 ?)			4-7	[3], [95], [8]
Enprofylline	1-5	10		appr. 2	[8]
Entacapone	0.4-1.0 (-7.0)			(0.5-) 1.5-3.5	[3], [15], [8]
Ephedrine	0.02-0.2	1	5[8]	3-11	[269], [87], [8], [57], [58]
Epirubicin	0.01-0.05			24-52	
Eprosartan	0.4-1.0 (-1.85)			5-9	[3], [15], [8]
Eptastigmine	0.0002-0.006			appr. 1	[8]
Ergotamine	0.00036-0.00042[375]	0.00082[376]		1.5-2.5	[47]
Erythromycin	0.5-6 (peak 4-12)	12-15		1-3	[11], [58]
Escitalopram[343]	0.015-0.08	0.16[311]		26.3±10.8	[4], [223]
Esmolol	0.15-2			4-16 min	[7]
Estazolam	0.055-0.2			10-24	[3], [58]
Eszopiclone[341]	appr. 0.087			4-9	[47]

Substance	Blood-plasma concentration (mg/L)			$t_{½}$ (h)	Ref.
	therapeutic ("normal")	toxic (from)	comatose-fatal (from)		
Et(h)amsylate	15-20			2.5-4	
Ethacrynic acid	0.05-0.1			1-4	[3], [9]
Ethadione	500-1000	1000			[8]
Ethambutol	0.5-6.5	6-10		2.5-3.5	[317], [58]
Ethanol		1000-2000	3500-4000	-[139]	
Ethchlorvynol	0.5-8	20	50	10-25 (-35)	[3], [58]
Ethinamate	1.5-10	50-100	200[8]	appr. 2	
Ethosuximide	30-100 (40-60)	150-200	250	30-60	[161], [164], [12], [64]
Ethyl chloride		200-300			[87]
Ethylene glycol		200-500	2000	11-19 (31[8 ; 278])	[318], [319], [320], [321], [322], [323], [324], [325], [66], [326]
Ethylmorphine[48]	0.3-0.6[377]		0.3-2.9	2-3	[47]
Etidocaine	0.5-1.5	1.6-2		2-3	[327]
Etidronat (Etidronic acid)				-[6]	[49]
Etilefrine	appr. 0.06			2-3.5	
Etizolam[48]	appr. 0.008-0.02	0.03[8]		7-15	[47]
Etodolac	10-20 (> 14[229])			6-8	[328], [3], [15],

Substance	Blood-plasma concentration (mg/L)			$t_{½}$ (h)	Ref.
	therapeutic ("normal")	toxic (from)	comatose-fatal (from)		
					[8]
Etomidate	0.1-0.5 (-1)			3.9±1.1 (2-11)	[3], [9]
Etoposide	2-6 (peak 8-14)			4-11	[3], [11]
Etoricoxib	1.3-3.6			20-36	[47]
Etravirine (ETR)	0.275 (0.081-2.98)[302]			appr. 41	[47], [110], [2]
Everolimus	0.003-0.008 (-0.014)[275]			28±7	[329], [330], [331], [332]
Ezetimibe	>0.015			appr. 30	[333], [334]
Famotidine	0.02-0.2	0.42[8]		2-4.5	[3], [335]. [336]
Fampridine	see 4-Aminopyridine				
Felbamate	(30-) 50-110[164]	150-200		15-23	[337], [4], [12], [338], [339]
Felbinac	appr. 0.4-1[326]			10-17	[3], [340]
Felodipine	0.001-0.012	0.01		22-27[88]	[341], [84], [8]
Fenbufen	appr. -60			10-12	[3]
Fendiline	0.02-0.15			appr. 20	[47]
Fenfluramine	0.04-0.3	0.5 – 0.7	6	18-25	[47]
Fenitrothion			1.1	33-64	[47]
Fenofibrate	5-30[241]			20-22	[3], [342]

Substance	Blood-plasma concentration (mg/L)			$t_{½}$ (h)	Ref.
	therapeutic ("normal")	toxic (from)	comatose-fatal (from)		
Fenoldopam	0.003-0.06			0.1	[15], [8]
Fenoprofen	(25-) 30-60			2-3	[343]
Fenoterol	(0.001-) 0.01-0.04			appr. 7	
Fentanyl	0.003-0.3[4]	-[339]	0.003-0.02[8; 103]	1-3.5 (transdermal patch: appr. 17)	[335], [47], [344], [345], [52], [346], [54], [347], [348], [349], [350], [351]
Fenthion			4.9 (0.6-16.6[279])	12	[47] ,[186]
Fexofenadine	appr. -0.3 [191]			14-18	[8], [352]
Finasteride	0.008-0.01			5-7	[353]
Flecainide[48]	(0.2-) 0.4-0.8	1-2	2.6[8]; 13[8]	10-20	[354], [70]
Fleroxacin	1-4			8-13	
Flucloxacillin	3-30			1-2	[11], [58]
Fluconazole	appr. 1-5 (-15)	20; 95[8]		22-31[83]	[355],[356], [357], [358], [11]
Flucytosine	35-70 (20-50)	100		3-5	[91]
Flumazenil[22]	(0.01-) 0.02-0.1	0.5		1-2	
Flunarizine	0.025-0.2	0.3		-[6]	[42]
Flunitrazepam[23]	0.005-0.015	0.05		10-20 (-30)	[359], [56],

Substance	Blood-plasma concentration (mg/L)			$t_{½}$ (h)	Ref.
	therapeutic ("normal")	toxic (from)	comatose-fatal (from)		
					[59]
Fluoride	0.095-0.190 (-0.285)[39]	0.5-2	3	2-9	[47] ,[123], [360], [361], [130], [10], [58], [362]
5-Fluorouracil	0.05-0.3	0.4-0.6		<0.5	[3], [11], [58]
Fluoxetine	0.12-0.5[130]	1	6[8]	2-6[6 ; 130]	[263], [75], [202], [363], [4], [264], [364]
Flupenthixol	0.001-0.01	0.015[311]		20-40	[4]
Fluphenazine	0.001-0.01	0.015[311]		10-18[45]	[4]
Flupirtine	0.5-1.5	appr. 3-4		7-11	[365]
Flurazepam[24]	0.02-0.1	0.2-0.5	0.8 ; 24[8]	appr. 2[24]	
Flurbiprofen	5-15			3-4	[366]
Fluspirilen	0.0001-0.0022	0.0044[311]		7-14[6]	[4]
Flutamide[60]	0.4-1.5[60]			7-20[60]	[43], [367]
Fluvastatin	0.05-0.4			1-3	[47]
Fluvoxamine	0.06-0.23	0.5[311]-0.65; 1.97[8]	2.8[8]	(8-) 15-22 (-28)	[47], [368], [202], [4], [369]
Fosamprenavir (FPV)	> 0.4[292]			7.7[319]	[110], [2], [111]

Substance	Blood-plasma concentration (mg/L)			$t_{½}$ (h)	Ref.
	therapeutic ("normal")	toxic (from)	comatose-fatal (from)		
Fosphenytoin[336]	see Phenytoin	30		0.13-0.25	[12]
Frovatriptan	0.004-0.008			20-30	[47]
Furosemide (Frusemide)	2-5 (-10)	25-30		1-3	[3], [58]
Fusidinic acid	30-200			4-6	
Gabapentin	appr. 0.5-6 (-20-30)[185]	25[311]; 45[8]; 85[8]; 105[8]		5-9	[47] ,[370], [371], [372], [373], [374], [375], [12], [376], [377], [378], [379], [380], [381], [382], [48]
Galant(h)amine	appr. 0.03-0.06	0.09[311]		6-8	[383], [4], [384]
Gallopamil	0.02-0.1		8[8]	3-8	[385], [84]
Gamma-hydroxybutyricacid (gamma-hydroxybutyrate, gamma-butyrolactone, GHB, liquid ecstasy)[48]	see 4-Hydroxybutyrate				[386], [387]
Ganciclovir	(0.29-0.51) 0.5-5[107]	3-5		2-4[83]	[388], [38], [39]
Gemcitabine	15-20 µmol/L[146]	-[192]		0.05 (0.18-0.43)	[209]
Gemfibrozil	appr. -25			1.5	[3]
Gentamicin	(2-) 4-10[233]	12		1.5-6	[389], [67], [390], [20], [391], [392],

Substance	Blood-plasma concentration (mg/L)			$t_{½}$ (h)	Ref.
	therapeutic ("normal")	toxic (from)	comatose-fatal (from)		
					[393], [394]
Glibenclamide (Glyburide)	0.05-0.2	0.6		10	[47]
Glicazide	1-3.7			6-14	[47]
Glimepiride	0.09-0.5			4-15	[47]
Glipizide	0.1-1 (-1.5)	2		3-7	[66]
Glutethimide	0.2-5	10-30	20-50	5-20	[30]
Glyburide	see Glibenclamide				
Glyceryl trinitrate (GTN)	see Nitroglycerin				
Gold	3-8	10-15		21-31[6] (oral)	[47], [58], [48]
Granisetron	0.009-0.017 (?)			3-14	[3], [15], [8]
Griseofulvin	0.3-1.3			22	[8]
Guaifenesin	0.3-1.4			appr. 1	[3], [15], [8]
Guanethidine	0.01			5-10[6]	[3], [58]
Halazepam[15]	see Nordazepam			30-40	
Haloperidol	0.005-0.017 (0.001-0.02)	0.05-0.5	0.5; 0.18[8, 74]	10-35[153]	[43], [395], [185], [396], [193], [397], [398], [240]
Halothan	22-260		3.4[8]; 8.3[8]	43	[87], [48]
Hematin	50-100				

Substance	Blood-plasma concentration (mg/L)			$t_{½}$ (h)	Ref.
	therapeutic ("normal")	toxic (from)	comatose-fatal (from)		
Hemin	see Hematin				
Heptabarb(ital)	0.5-4	8-15	20	6-11	
Heptaminol	appr. 0.2-1 (-1.5)			2-3	
Heroin (Diacetylmorphine or Diamorphine, [DAM])[337]	-[338]	-[339]		2-5 min	[273], [274], [275], [276], [277], [278], [279], [280], [281]
Hexachlorobenzene (HCB)	-0.0001[332]			appr. 2 years	[100]
ß-Hexachlorocyclohexane (ß-HCH, ß-lindane)	-0.0001[332]			appr. 7 years	[100]
Hexachlorophene	0.003-0.65 (-1)		35	6-44	[11], [58]
n-Hexane	-0.01			1.5-2	[47]
Hexapropymate	2-5	10-20			[8], [11]
Hexobarbital	1-5	10-20	50	4-6	
Hirudin-rec	-[171]	-[171]		(1-) 2.5-3	[399], [43], [3]
Hydralazine[5]	0.05-0.5 (-1.5)			2-6	[84]
Hydrochlorothiazide	appr. 0.04-2			10-12	[3], [42]
Hydrocodone	0.01-0.05	0.1[339]	0.2	appr. 4	[8], [244]
Hydromorphone	appr. 0.005-0.015	0.1[339]	0.2	2-3	[400], [9], [8], [270]

Substance	Blood-plasma concentration (mg/L)			$t_{½}$ (h)	Ref.
	therapeutic ("normal")	toxic (from)	comatose-fatal (from)		
4-Hydroxybutyrate (GHB)[48]	appr. 50-120[4]	80 (abuse)	250-280 (abuse)	0.3-0.5 (-1)	[47], [3], [8], [244], [401], [402]
Hydroxychloroquine	-0.1 (-0.4)	0.5-0.8	4	dose-dependent[6]	[3], [403], [13], [14]
4-Hydroxy-3-methoxymethamphetamine (HMMA)	-[333]			11.5-13.5	[404], [405], [406]
Hydroxyzine	0.05-0.1	0.1	39[8]	7-20	[56], [11], [58]
Ibandronat (Ibandronic acid)	-[321]				[49]
Ibuprofen	15-30	200	352[8; 346]	2-3	[47], [407], [343], [293], [408]
Idebenone	0.05-0.2			16-22	[3], [409]
Iloperidone	0.005-0.01	0.02[311]		18-33	[4]
Iloprost	appr. 0.0001			appr. 0.5	
Imatinib	0.72[258]			appr. 18	[410], [411]
Imipenem	0.5-5 (20-75)			1	[8], [412]
Imipramine[48, 125]	0.05-0.35	0.5-1	1.5-2	6-20[26]	[308], [74], [309], [76], [77], [413], [78], [79], [80]
Indinavir (IDV)	> 0.1[260]	appr. 0.5		1.5-2	[211], [3], [110], [2], [414], [111]

Substance	Blood-plasma concentration (mg/L)			$t_{½}$ (h)	Ref.
	therapeutic ("normal")	toxic (from)	comatose-fatal (from)		
Indomet(h)acin	0.3-1 (-3)	4-5		3-11	[415]
Indoramin	appr. 0.025-0.1			12 (3.5-15)	[95]
Iproniazid	appr. -5 ?				
Irbesartan	1.9-3.3			11-15	[47]
Iridium	-0.02				
Iron	0.5-2	6	17		[42], [58], [64]
Isoniazid (INH)	5-10	20	(30-) 100	1-3	[3], [317], [8]
Isopropanol[361]		200-400	1000	2.5-3	[47], [58]
Isosorbid mononitrate (ISMN)	0.1-1			2-5	[95]
Isotretinoin	appr. 0.001-0.002 (topical)[224]			10-20	[3], [416], [417]
Isoxicam	5-15			20-50	
Isradipine	0.0005-0.002 (-0.01)	0.01	0.26[8, 259]	5-10	[418], [3], [84], [419], [420]
Itraconazole	appr. 0.4-2[111]			24-36	[421], [422], [423], [424]
Ivermectin	appr. 0.05[51]			16-28	[3], [425]
Kanamycin	1-4 (10-25)	25-30		0.5-3	
Kavain	appr. 0.05			2.8-6.7	[47]
Ketamine	1-6	7 (abuse)	3.8[8]; 6.9[8]	1-3 (-4)	[47], [426],

Substance	Blood-plasma concentration (mg/L)			$t_{½}$ (h)	Ref.
	therapeutic ("normal")	toxic (from)	comatose-fatal (from)		
					[56], [427], [428]
Ketanserin	0.05-0.5			10-22	
Ketazolam[15]	0.001-0.02			1-3	[59]
Ketobemidone	0.01-0.05		0.2-3.2	1.8-4.2	[47], [426], [3], [428]
Ketoconazole	1-3 (-6)			6-10	[8]
Ketoprofen	1-6 (-20)		1100[8]	1,1-2 (-4.2)	[429], [47], [430], [343], [431], [432], [433]
Ketorolac	0.5-3	5		4-10	[3], [8]
Ketotifen	0.001-0.004	0.02	1.2[8]	21	[57]
Labetalol	0.03-0.18 (-0.65)[50]	1		3-10	[3], [95], [7]
Lacidipine	0.003-0.006			12-19	[8]
Lacosamide	1-10	20[311]		13	[4]
Lamivudine	-[230]			5-7	[123], [434],[2]
Lamotrigine	(1-5) 3-14	20-30	35.7[8; 347]; 50[8]	23-37[109]	[47], [374], [435], [436], [381], [437]
Lead	-0.09[324]	0.4-0.6	3	-[180]	[47], [64], [123], [438], [439], [100]

Substance	Blood-plasma concentration (mg/L)			$t_{½}$ (h)	Ref.
	therapeutic ("normal")	toxic (from)	comatose-fatal (from)		
Leflunomide[255]	8.8 ± 2.9, 18 ± 9.6, 63 ± 36[256]			11 (4-28)[6]	[440], [123], [441], [442]
Levacetylmethadol (LAAM)	appr. 0.02-0.06			35-60	[8]
Levamisole	appr. 0.1-0.7			3-6	[8]
Levetiracetam	(3-) 10-40	400[8; 264]		4-10	[8], [443]
Levocabastine	< 0.001-0.01[147]			33-40	[444]
Levocetiricine[378]	0.3-0.5			6-10	[47]
Levodopa (L-Dopa)	0.3-2	5[311]	650[8]	1-3[215]	[445], [446], [447], [448], [4], [449]
Levomepromazine[27]	0.005-0.025 (-0.2)	0.4	0.5	15-30[28]	
Levomethadone[352]	0.04-0.4	(0.4-) 1[339]	0.1-0.2[362]	10-40	[123], [4], [450]
Levorphanol	0.007-0.02	0.1	2.7[8]	11-30	[8]
Levothyroxine	0.045-0.14[47]			6-8[6]	[451]
Lidocaine (Lignocaine)	(1-) 1.5-5[113]	6-7	10	1-4[113]	[452], [453], [391], [70], [327], [454]
Linezolide	appr. 0.5-4			appr. 5	[8]
Lisinopril	(0.005-) 0.02-0.07	0.5		12	[84]
Lithium	4-8[79]	13	14	8-50[28]	[455], [456], [457], [80],

Substance	Blood-plasma concentration (mg/L)			$t_{½}$ (h)	Ref.
	therapeutic ("normal")	toxic (from)	comatose-fatal (from)		
					[264], [458]
Lofepramine	0.003-0.01			10-20	
Loperamide	-[84]			7-15	[459]
Lopinavir (LPV)	> 1.0[294]			5-6	[110], [2], [111]
Loprazolam	0.003-0.01			11-20	[59]
Loratadine	0.001-0.02[138]			8-14	[460], [461]
Lorazepam	(0.02-) 0.08-0.25	0.3-0.5		10-40	[462], [59], [463], [224]
Lorcainide	0.1-0.4 (-0.9)			5-10	[8], [464], [465], [466]
Lormetazepam	0.002-0.01 (-0.025)	0.1		10-15	[4], [59]
Lornoxicam	0.1-0.8			2-6	[8]
Losartan	< 0.2 (-0.65)[227]			1.5-2	[3], [8]
Loxapine	0.01-0.03 (-0.1)	1	7.7	4 (1-14)	[8], [11]
Lysergide (lysergic acid diethyl amide, LSD)	0.0005-0.005	0.001	0.002-0.005	appr. 2-5	[467], [15], [8], [11]
Magnesium	55-75[121]	120-140	150-180	2.1-2.9	[47], [3], [468]
Malathione		0.35[8]; 0.5	1.8[8]; 175[8;] 517[8]	3-6	[47]
Manganese	0.0005-0.0015			12-36[6]	[47]

Substance	Blood-plasma concentration (mg/L)			$t_{½}$ (h)	Ref.
	therapeutic ("normal")	toxic (from)	comatose-fatal (from)		
Maprotiline	0.075-0.13	(0.22-) 0.5-1	1-5	20-60	[4]
Maraviroc (MVC)	> 0.05[300]				[110]
MCPA	see 2-Methyl-4-chlorophenoxyacetic acid				
MCPP	see 2-Methyl-4-chlorophenoxypropionic acid				
MDA	see Methylenedioxyamphetamine				
MDEA	see Methylenedioxyethylamphetamine				
MDMA	see Methylenedioxymethylamphetamine				
Mebendazole	≥ 0.1[67]	appr. 0.6		2.8-9	[43]
Medazepam[30]	0.1-0.5 (-1)	0.6		2-5	[59], [8]
Mefenamic acid	2-10 (-20)	25		2-4	[9], [13], [14]
Mefloquine	0.4-1[108]	1.5-2[8]		appr. 21[6]	[469], [470]
Melatonin	0.0005-0.1[379]			40-50 min	[47]
Melitracen	0.01-0.1			12-23	[8]
Meloxicam	0.4-2			17-22	[471], [15], [8]

Substance	Blood-plasma concentration (mg/L)			$t_{½}$ (h)	Ref.
	therapeutic ("normal")	toxic (from)	comatose-fatal (from)		
Melperone	0.03-0.1[219]	0.2[311]	17.1[8]	4-8	[4], [472], [15], [8], [473]
Melphalan	-1.5			1.5-2	[8]
Memantine	0.09-0.15	0.3[311]		60-100	[4]
Meperidine	see Pethidine				
Mephenesin	3-10 (?)			appr. 2-4	[15], [8]
Mepindolol	0.007-0.07			3-6	[7]
Mepivacaine	appr. 0.4 (-4)	5-6 (-10)	50	1-3	[15]
Meprobamate	5-10	10-25	30	6-17	[56]
Meptazinol	0.025-0.25			2-3	[8]
Mercaptopurin[364]	0.03-0.08	1-2			[8]
Mercury	appr. 0.0015-0.002 (< 0.005)[178]	0.05-0.2	0.5	appr. 3[6]	[123], [64], [474], [66], [475], [100], [476], [477], [478]
Mescaline	1.5-3.8			6	[47]
(Mesalazine (Mesalamine)	appr. -1[119]			0.5-2.4[120]	[479]
Mesoridazine	0.15-1	3-5	3[8]; 4[8]; 16[8]	20	[15]
Mesuximide	see Methsuximide				
Metaclazepam	0.05-0.2			7-23	[59]

Substance	Blood-plasma concentration (mg/L)			$t_{½}$ (h)	Ref.
	therapeutic ("normal")	toxic (from)	comatose-fatal (from)		
Metamizole (Dipyrone)[5]	10[32]	20[32]		6-8	[15]
Metformin	0.1-1 (0.6-1.3)	5-10	64[8]; 85[8]; 91[8]; 166[8]	2-4 (-10)	[480], [481]
Methadone	(0.05-) 0.1-0.5 (-0.75)[135]	0.2[339]	0.4[362]	23-25 (13-55)	[482], [483], [484], [485], [486], [487], [488], [489]
Methamphetamine (Methylamphetamine)	-0.1	0.15	1-18; 40[8]	6-15[344]	[47], [8]
Methanol	appr. -2	200	900	10-12 (-24)[325]	[47], [325], [15], [8], [58], [490]
Methapyrilene	appr. 0.1	4			
Methaqualone	1-3	3-5	5-10	10-40	[8]
Methemoglobin (Met-Hb)	-[199]	25-30 %	60-70 %		[3], [10], [11]
Methimazole	0.5-2.5			2-28	[467], [15], [8]
Methocarbamol	25-40 (-50)	250		0.9-2	[3], [11],[58]
Methohexital	1-6 (-11)[55]	2-20		1-3	[8]
Methomyl		0.63[8]; 1.6[8]	1.6[8]; 28 (8-57)		[47]
Methotrexate	0.04-?	0.4		5-9 (low dose); 16-29 (high dose)	[47]
Methotrimeprazine	see Levomepromazine				
Methoxsalen (8-Methoxypsoralene)	0.025-0.1 (-0.2)	1			[3], [10]

Substance	Blood-plasma concentration (mg/L)			$t_{½}$ (h)	Ref.
	therapeutic ("normal")	toxic (from)	comatose-fatal (from)		
Methsuximide (Mesuximide)	10-40[223]	40-50		20-40 (-45)	[3], [491], [8], [11], [58]
2-Methyl-4-chlorophenoxyacetic acid (MCPA)	-	appr. 100	appr. 180	-[187]	[3], [492]
2-Methyl-4-chlorophenoxypropionic acid (MCPP)	-	appr. 100	669[8]; 715[8,181]	17[183]	[3]
Methyldopa	1-5	9[8]		1.5-3	[9], [13], [14]
3,4-Methylenedioxyamphetamine (MDA)	-0.4	1.5	1.8-2; 26[8]	10.5-12.5	[15], [8], [58], [467], [404], [405], [406], [493], [494]
3,4-Methylenedioxyethylamphetamine (MDEA, MDE; Eve)	-0.2		1; 4.2[8]; 12[8]	4-8[334]	[47], [493], [495], [496], [497]
3,4-Methylenedioxymethylamphetamine (MDMA; Ecstasy, XTC; Adam)	0.1-0.35[236]	0.35-0.5	0.4-0.8	7-8 (-10)	[498], [467], [15], [8], [58], [404], [405], [499], [406], [493], [494]
Methylphenidate	0.01-0.06	0.1-0.5; 1[8]	2.3	2-7	[270]
Methylphenobarbital	see Phenobarbital				[12]
4-Methylthioamphetamine (4-MTA, p-MTA)			2[8]; 4.2[8]; 7.4[8]		[500], [501], [502], [503], [504]
Methyprylon(e)	< 10-20	25-75	50 (-100)	3-6, 9-11	[8]
Metiamide	0.01-0.06				[58]

Substance	Blood-plasma concentration (mg/L)			$t_{½}$ (h)	Ref.
	therapeutic ("normal")	toxic (from)	comatose-fatal (from)		
Metildigoxin[3]	0.0005-0.0008	0.0025-0.003	0.005	40-70	[18], [19], [20], [21], [22], [23], [24], [25], [26], [27]
Metipranolol[33]	0.02-0.08			2-3.5	
Metoclopramide	0.05-0.15	0.2	4.4[8]	3-6	[66]
Metocurine	appr. -0.4				
Metoprolol[48]	0.035-0.5	0.65[8]; 12-18	4.7[8]; 12[8]; 18[8]; 63[8]	2.5-7.5	[47], [3], [7]
Metrifonate	appr. 1.4-3.6			2-5	[8]
Metronidazole	3-10 (-20)	200[8]		6-10 (-14)	[8]
Mexiletine	0.7-2	2	35[8]	5-26	[70], [505]
Mianserin	0.015-0.07	0.14[311]; 0.25-0.5		14-33	[4], [223]
Mibefradil	appr. 0.2-0.3			17-25	[8]
Miconazole	appr. 1			24	[8]
Midazolam	0.04-0.1 (-0.25)[134]	1-1.5		1.5-3[46]	[506], [507], [508], [61], [224]
Mifepristone	[216]			24-48 (20-54)	[509]
Milnacipran	0.05-0.11	0.22[311]		5-8	[4]
Milrinone	0.15-0.25	0.3		1-2	[3], [95], [42]
Minaprine	appr. -0.1				

Substance	Blood-plasma concentration (mg/L)			$t_{½}$ (h)	Ref.
	therapeutic ("normal")	toxic (from)	comatose-fatal (from)		
Minoxidil	appr. 0.02-0.2[149]	1.4[8]; 3.1[8]	2.7[8]	1.3-4.2	[47], [3], [84]
Mirtazapine	0.03-0.08 (-0.3)	1-2; 2.3[8]		20-40[188]	[3], [4], [510]
Misoprostol	-[286]			0.5±0.4	[3], [511], [512]
Mitotane	14-20	20		18-159[6]	[513]
Mizolastine	appr. 0.2-0.8			8-17	[3], [8]
Moclobemide[141]	0.3-1.0 (-3)	2[311]; 11[162]; 25-60		1-7	[514], [515], [516], [517], [518], [519]
Modafinil	1-1.7 (-3)[257]	3.4[311]		10-15	[89], [4], [8], [520]
Moexiprilat	0.005-0.04			2-10	[8]
Molindone	0.04-0.5	0.15[8]	6[8]; 9.3[8]	1.2-2.8	[47]
Molsidomine	0.002-0.01			1-2.5	[95]
Molybdenum	-0.005				
Montelukast	appr. 0.05-0.3			3-6	[3], [15], [8], [521]
Moricicine	0.12-1.27			(3-) 6-13	[467], [15], [8]
Morphine[288]	0.01-0.1	0.1[339]	0.1-4	1-4	[522], [241], [523], [524], [87], [525]
Moxonidine	0.001-0.002 (-0.004)			2-4	[3], [95], [8]

Substance	Blood-plasma concentration (mg/L)			$t_{½}$ (h)	Ref.
	therapeutic ("normal")	toxic (from)	comatose-fatal (from)		
Muromonab-CD3 (OKT 3)	appr. 0.7-1.3			appr. 18	
Mycophenolate mofetil	-[211]			16-18[212]	[526], [527], [528], [529]
Nabumetone	-[206]			-[206]	[3], [530]
Nadolol	0.01-0.25		1.3[8]	(14-) 20-24	[8], [7]
Naftidrofuryl (Nafronyl)	<0.5			1-2	
Nalbuphine	0.02-0.2			2.5-7	[8]
Nalidixic acid	10-30	40-50		1-2 (-7)	[3], [9], [15], [8]
Nalmefene	-0.1			8.5-11	[3]
Naloxone	0.01-0.03			1-2	[8]
Naltrexone	0.003-0.05[99]			4-10	
Naphyrone (Naphthylpyrovalerone)		0.03[334]			[531]
Naproxen	20-50 (-100)	200-400; 414[8]		10-20	[532], [343], [533], [293]
Naratriptan	appr. 0.01-0.05			5-6	[3], [15], [8]
Nebivolol	< 0.02 (-0.2)	0.48[8]		10 (8-27)	[3], [8], [534], [535], [536]
Nedocromil	< 0.025			1.5-3.3	[3]
Nefazodone	appr. 0.01-0.3 (?)[220]	5.5[8, 221]		2-7[222]	[8], [3], [537], [538], [539],

Substance	Blood-plasma concentration (mg/L)			$t_{½}$ (h)	Ref.
	therapeutic ("normal")	toxic (from)	comatose-fatal (from)		
					[540], [541], [542]
Nefopam	0.01-0.1	4[8]	12[8]	3-8	[8]
Nelfinavir (NFV)	> 0.8[295]			3.5-5	[110], [87], [2], [111]
Neostigmine	appr. 0.001-0.01[127]			0.4-1.3	[316], [543]
Netilmicin	1-12			2-3[80]	[8]
Nevirapine (NVP)	> 3.0[298]			25-30	[110], [2], [111]
Nicardipine	0.07-0.1			7-12	[84]
Nickel	-0.003[330]	0.005			[58], [100]
Nicotine[123]	0.005-0.02 (-0.03)	0.4 (-1)	5; 13.6[8]	1-4[124]	[3], [544], [42], [545]
Nicotinic acid	4-18			0.3-1	[8]
Nifedipine	0.025-0.15	appr. 0.15-0.2	0.15[8]; 1.2[8]; 5.4[8]	2-5	[47], [84]
Niflumic acid	2-35			2-3	[15]
Nilvadipine	< 0.01			11-20	[84]
Nimesulide[235]	0.1-6.5			2-7 (11-20)	[546], [3], [15], [8]
Nimodipine	0.01-0.05			1-2 (8-9)	[84]
Nimustine	0.0002-0.0005				[58]

Substance	Blood-plasma concentration (mg/L)			$t_{½}$ (h)	Ref.
	therapeutic ("normal")	toxic (from)	comatose-fatal (from)		
Nisoldipine	0.0003-0.001			7-12	[3], [84]
Nitrazepam	0.03-0.1	0.2-3	5	20-30	[8], [59]
Nitrendipine	0.01-0.05			8-12	[84]
p-Nitroaniline			4.2[8]		[547]
Nitrofurantoin	(0.5-) 1-3 (-5)	3-4		0.7-1.5	[8]
Nitroglycerin (Glyceryl trinitrate)	appr. -0.015			20-30 min	[548]
Nitroprusside	see Thiocyanate	see also Cyanide			
Nizatidine	0.05-0.5 (-1.0)			0.7-2.1	[8]
Nomifensine	0.01-0.1	8	17[8]	2-5	[87], [8]
Nordazepam	(0.02[273]-) 0.2 -0.8	1.5-2		40-80	[284], [285], [467], [8], [15]
Nordiazepam	see Nordazepam				
Norephedrine	see Phenylpropanolamine				
Norfenefrine	-0.4			2-3	[8]
Norfloxacin	0.5-5			3-4	[3], [58]
Normesuximide[31]	10-30	40		38	
Nortriptyline[48]	0.02-0.2 (0.05-0.15)	0.3[311]; 0.5	1-3	18-56[68]	[76], [80], [81], [82], [223]
Noscapine	0.02-0.4			1.5-4	[47]

Substance	Blood-plasma concentration (mg/L)			$t_{½}$ (h)	Ref.
	therapeutic ("normal")	toxic (from)	comatose-fatal (from)		
Obidoxime	1-10 (appr. 10-15 µmol/L)				[549], [58]
Ofloxacin	appr. 2.5-5.5	(30-) 40[8]		(3-) 5-8	[3], [550]
OKT 3	see Muromonab-CD3				
Olanzapine	0.02-0.08	0.15-0.2	0.25[8]; 1[8]; 2.5[8]; 4.9[8]	30-60	[47], [551], [101], [552], [553], [4], [72], [554], [15], [555], [58]
Olpadronat (Olpadronic acid)				-[6]	[49]
Omeprazole[48]	0.05-4[98]			0.5-1 (-1.5)	
Ondansetron	0.03-0.3			3-5.5	[8], [66]
Opipramol	0.05-0.5	1[311]; 2-3	7-10	6-12[262]	[43], [556], [4]
Orphenadrine	0.1-0.2 (-0.6)	1.7	3.6[8]; 5-7	(10-) 14-18	[296], [56], [9], [557]
Oxatomide	0.02-0.1			14-30	[3]
Oxazepam	0.2-1.5	2	3-5	6-20	[283], [3], [59], [13]
Oxazolam	see Nordazepam				
Oxcarbazepine	10-35[172]	45		1-2.5 (-5)[172]	[3], [558], [12], [559], [560], [381]
Oxibutynin	0.001-0.02				[8]

Substance	Blood-plasma concentration (mg/L)			$t_{½}$ (h)	Ref.
	therapeutic ("normal")	toxic (from)	comatose-fatal (from)		
N-Desethyloxibutynin	0.01-0.08				[8]
Oxpentifylline	see Pentoxyfylline				
Oxprenolol	0.05-0.3 (-1.0)	2-3	10	1-4	[7], [8]
Oxycodone[48]	0.005-0.1	0.2[339]	0.6; 5[8]	2-5[53]	[9], [42], [11], [58], [244]
Oxyfedrine	appr. 0.06			4.2	[95]
Oxyphenbutazone	25-100	200		48-72	[47], [8]
Oxypurinol[61]	5-15	20		18-30	[11], [58]
Oxytocin	appr. -0.0002			3-5 min	[3]
Paclitaxel	0.1-1[122]			4-8 (-20)	[8]
Paliperidone	0.02-0.06	0.12[311]		23	[4]
Pamidronate (Pamidronic acid)	< 0.02[323]			-[6]	[49], [561]
Pancuronium	0.1-0.6	0.4[8; 198]	1.6	1.5-2.5	[562]
Pantoprazole	appr. -4.6[98]			1-2	[8], [3]
Papaverine	0.2--2			1-2 (6-7)	[57]
Paracetamol	(5-)10-25	100-150	200-300	2-4	[563], [564], [565], [566], [567], [568], [569], [243], [570], [571]
Paraldehyde	10-100	200	400-500	4-10	[87], [48]

Substance	Blood-plasma concentration (mg/L)			$t_{½}$ (h)	Ref.
	therapeutic ("normal")	toxic (from)	comatose-fatal (from)		
Paraoxon	-	0.005			[11]
Paraquat	-	0.05	0.12[8; 348]; 1-2[201]	8-12[349]	[123], [572], [11], [573], [574], [575], [576], [577], [578], [579], [580]
Parathion	-	0.01-0.05	0.05-0.08		[3], [10], [58]
Paroxetine[48]	< 0.01-0.05 (-0.12)	0.35-0.4	3.7[8]; 4[8 ;306]	16-24[93]	[263], [368], [202], [581], [582], [583]
Pefloxacin	1-10 (3-6)	25		8-15	[8]
Pemoline	appr. 1-7			7-13	[8]
Penbutolol	0.01-0.3 (-1.0)			20-26	[7]
Penfluridol	0.004-0.025			70	[3], [11]
(D-)Penicillamine	1.7-5.6 (-11)			1-3	[8]
Pentachlorophenol	-0.2	30	45		[11]
Pentamidine	0.3-0.5	appr. 0.8		6-9	[3], [15], [8]
Pentazocine	0.01-0.2	1-2	3	2-5	[8]
Pentobarbital	1-5 (-10)	10-19	15-25	20-40	[87], [48], [8]
Pentoxifylline[72]	appr. 0.5-2			0.5-2 (4-6)	[8]
Pentoxyverine	-0.18			2-3	[8]

Substance	Blood-plasma concentration (mg/L)			$t_{½}$ (h)	Ref.
	therapeutic ("normal")	toxic (from)	comatose-fatal (from)		
Perazine	0.02-0.35 (-0.44)	0.5 (6.1[8])		8-16 (-35)	[584], [8]
Perhexiline	0.11-0.6[309]	0.6-1.2		(7-) 12-18 (-23)	[585], [586], [3]
Perici(y)azine	0.005-0.03	0.1			[9]
Perindopril	0.08-0.15			0.8-1.5[265]	[15], [8], [3]
Perphenazine	0.001-0.02 (0.0006-0.0024)[161]	0.005[311]; 0.05		8-12 (-21)	[587]
Pethidine	0.1-0.8[115]	1-2	2 (-3)	3-6 (-10)	[588], [589], [590], [591], [592]
Phenacetin[62]	5-10 (-20)	50		appr. 1	[9], [13]
Phenazepam	0.02-0.04			60	[47]
Phenazone (Antipyrine)	5-25	50-100		10-12	[8]
Phencyclidine (PCP)	0.01-0.2	0.007-0.24 (-0.8)	(0.3-) 1-5	1-12 (-50)	[467], [15], [8], [11], [58]
Phendimetrazine	0.02-0.1		0.3-0.7	2-4	[8]
Phenelzine	0.001-0.002 (-0.04)	0.5	1.5	6-8	[3], [11], [58]
Pheneturide		5-20		30-90	[12]
Phenformin	0.03-0.1	0.6	3	4-13	[15], [8], [3]
Pheniramine	0.01-0.27		appr. 2	16-19	[15], [8], [3]

Substance	Blood-plasma concentration (mg/L)			$t_{½}$ (h)	Ref.
	therapeutic ("normal")	toxic (from)	comatose-fatal (from)		
Phenmetrazine	0.02-0.25	0.5	4	appr. 8	[8]
Phenobarbital	10-30 (15-40)	30-40	50-60	60-130	[161], [164], [415]
Phenol		50	90		[11]
Phenprocoumon	0.16-3.6 (1-5)	5		100-160[35]	[11], [58]
Phensuximide	4-10 (-20)	80		4-12	[8], [11], [58]
Phentermine	0.03-0.1	0.9	1	appr. 20	[15], [8], [11], [58]
Phenylbutazone[36]	50-100	120-200	400	30-175[37]	[9], [13]
Phenylephrine	0.04-0.1			2-3	[8]
Phenylpropanolamine (Norephedrine)	0.1-0.5	2	48	3-7	[3], [9]
Phenytoin	5-15 (10-20)[81]	20-25	43[8] ; 50	10-60[37]	[164], [593], [594], [595], [596],[597], [598], [599], [600]
Pholcodine	appr. 0.07-0.2			35-75	[47]
Physostigmine	< 0.001-0.005			0.4-1	[316], [601], [303]
Pimozide	0.004-0.01 (-0.02)	0.02[311]		24-55	[4]
Pinazepam[15]	0.01-0.05			16	[59]
Pindolol	0.02-0.15	0.7-1.5		2-5	[7]

Substance	Blood-plasma concentration (mg/L)			$t_{½}$ (h)	Ref.
	therapeutic ("normal")	toxic (from)	comatose-fatal (from)		
Pipamperone	0.1-0.4	0.5-0.6		17-22	[4]
Piperacilline	1-5 (20-70)			1-2	[15], [8], [11], [58]
Piperazine	0.02-0.1	0.5			[42], [66], [58]
Pipotiazine	0.001-0.06	0.1		8-11	[3], [9], [8], [11], [58]
Piracetam	appr. 20-50			4.5-7	[8]
Pirenzepine	0.03-0.45			8-20	[8]
Piritramide	0.0035- 0.014[128]	-[128]		4-10	[602], [8]
Pirmenol	1-4			6-18	[3], [8], [11]
Piroxicam	2-6	14[8]		30-70	[8]
Pizotifen	0.007-0.009			26	
Posaconazol	> 0.7 (for invasive aspergillosis)			20-66	[47], [603], [604], [605]
Practolol	1.5-5			appr. 6-8	[8]
Prajmalium[48]	0.06-0.44			5-7	[8]
Pramipexole	appr. 0.0002-0.007	0.015[311]		8-14	[4], [467], [15], [8]
Pranlukast	appr. 0.2-1.2			appr. 2-9	[15], [8], [3]
Prazepam[15]	0.2-0.7	1		1-3	[8], [59]

Substance	Blood-plasma concentration (mg/L)			$t_{½}$ (h)	Ref.
	therapeutic ("normal")	toxic (from)	comatose-fatal (from)		
Praziquantel	appr. 0.2			1-2.5	[8]
Prazosin	0.001-0.02	0.9		2.9±0.8	[95], [42]
Prednisolone	0.5-1			2-6	[8]
Pregabalin	2-5 (-8)	10[311]; 13[8]; 60[8]; 67[8]		appr. 6	[373], [4], [606], [607]
Prilocaine	0.5-1.5 (-2)[126]	5-6	appr. 20	1-2	[608], [327]
Primaquine	appr. 0.1-0.2			4-7	[8]
Primidone[63]	4-12 (8-15)	20-50	65	4-12, 9-22	[161], [164]
Probenecid	100-200 (20-150)			3-17[37]	[8]
Procaine	0.2-2.5 (-15)	15-20	20	-0.5	[15], [11], [58]
Procainamide[5]	(2.5-) 4-10 (-12)	10-15	20	2-5 (-8)	[70], [609], [8]
N-Acetylprocainamide[38]	(5-) 10-35 (-40)			3-7	[8]
Prochlorperazine	0.01-0.05	0.2-0.3	5	7-9 (-18)	[3], [9], [58]
Procyclidine	0.08-0.63	1-2	7.8[8]	7-16	[15], [8], [11]
Proguanil[48]	appr. 0.04-0.15[114]			13-24[114]	[610], [58]
Promazine	0.01-0.05 (-0.4)	1	5	5-41 (8±7)	[8]
Promethazine	0.05-0.2 (-0.4)	1-2	2.4[8]; 1.8-5.4[250]	8-15 (-20)	[56], [611], [612]
Propafenone[48]	(0.04-) 0.3-2	(1.1-) 2-3	7.7[8]; 9[8]	5-8, 2-32[48]	[613], [70], [42]

Substance	Blood-plasma concentration (mg/L)			$t_{½}$ (h)	Ref.
	therapeutic ("normal")	toxic (from)	comatose-fatal (from)		
Propallylonal	0.3-10	appr. 10		appr. 3	[8]
2-Propanol	see Isopropanol				[64]
Propantheline	appr. -0.02			1-3	[3]
Propiomazine	< 0.3 (?)			8-10	[56], [614]
Propofol[48]	appr. 2-8			3-8[91]	[244], [615], [52], [616]
Propoxyphene	see Dextropropoxyphen				
Propoxur			0.3[8]		[87]
Propranolol	0.02-0.3	(0.5-) 1-3	4-10	2-6	[7], [112]
Propylene glycol	0.05-0.5	1000; 4700[8]		2-5	[47], [11], [58], [617]
Propylhexedrine	0.01	0.5	2-3		[58]
Propyphenazone	3-12			1-1.5 (-3)	[9], [13], [14]
Prothipendyl	0.005-0.01	0.02[311]; 0.1-0.5		2-3	[4]
Protriptyline	0.05-0.3	0.5	1; 20.7[8]	50-200	[87], [58]
Pseudoephedrine	(0.05-) 0.5-0.8		19-20[280]	9-16	[618], [266], [267], [269], [15], [11], [58], [619]
Psilocin[380]	appr. 0.008	0.018[8]		1.8-4.5	[47]
Psilocybin	see Psilocin				

Substance	Blood-plasma concentration (mg/L)			$t_{½}$ (h)	Ref.
	therapeutic ("normal")	toxic (from)	comatose-fatal (from)		
Pyrazinamide	30-75			9-10(-25)	[620], [3], [9]
Pyridostigmine	< 0.05-0.2			1-2.5	[316], [621], [622]
Pyridoxine	0.003-0.018			3-6	[66]
Pyrilamine			11[8]		[87]
Pyrimethamine	appr. -1.5			80-96	[3]
Pyrithyldione	1-10			11-20	[9], [13], [14]
Quazepam	0.01-0.05 (-0.15)[131]			39 (25-41)	[59], [8], [11], [58]
Quetiapine	0.1-0.5[239]	1[311]; 1.8[8]	1.9[8]; 5.1[8]; 12.7[8]	appr. 5-7[240]	[623], [624], [625], [626], [87], [627], [628]
Quinidine[48]	1-5	6-10	10-15	4-12	[70], [23]
Quinine	1-7	10		4-15	[629], [630]
Rabeprazole	appr. -0.6			1-2	[15], [8]
Ramipril	appr. 0.001-0.04[228]			1-5	[3], [8]
Ranitidine	0.05-1			2-4	[631]
Raltegravir (RAL)	0.072 (0.029-0.118)[303]				[110]
Reboxetine	0.06-0.35 [281]	0.7[311]		12-14 (-30)	[632], [3], [633], [4]

Substance	Blood-plasma concentration (mg/L)			$t_{½}$ (h)	Ref.
	therapeutic ("normal")	toxic (from)	comatose-fatal (from)		
Recainam	1.3-5.7			5-7	[634]
Remacemide	appr. 0.1-1			4	[8]
Remifentanil	-0.02			0.15	[8]
Remoxipride	2.15±0.59[132]		41-150	5-10	[56], [635], [636]
Retinol (Vitamin A)	0.2-0.8 (0.7-2.8 µmol/L)				[66], [637]
Ricin		0.0005			[638]
Rifabutin	0.05-0.15			24-58	[47], [3]
Rifampicin (Rifampin)	0.1-10[101]	204[8]	55[8]	1-6[37]	[47], [620], [317], [639]
Rifapentine				13.2	[620]
Riluzole	appr. 0.05-0.5 (-1.5)			9-15	[467], [15], [8]
Risedronat (Risedronic acid)				-[6]	[49]
Risperidone[48]	appr. 0.006[158] (0.002-0.02[272])	0.12[311]	1.8[8]	2-4[159]	[47], [457], [4], [640], [641]
Ritonavir	appr. 5-11 (-20)			3-5	[3], [642],[2]
Rivastigmine	0.008-0.02	0.04[311]		1-2 (oral); appr. 3 (transdermal patch)	[4], [303], [15], [8], [643], [644]
Rizatriptan	appr. -0.1			2-3	[3], [15], [8]
Rocuronium	appr. -17			appr. 1.5	[8]

Substance	Blood-plasma concentration (mg/L)			$t_{½}$ (h)	Ref.
	therapeutic ("normal")	toxic (from)	comatose-fatal (from)		
Ropinirole	0.0004 – 0.006[254]	0.012[311]		3-10	[4], [8], [645]
Ropivacaine		(1-) 2[173]		2[168]	[646], [647], [648]
Rosiglitazone	appr. 0.1-0.3			4	[8]
Roxatidine	0.1-0.8			5-6	[8]
Roxithromycin	4-12			12	[115], [3]
Rufinamid	5-30	40[311]		7	[4]
Salbutamol (Albuterol)	0.004-0.02	(0.03-) 0.1-0.15[116]	0.16	3-6	[11], [58], [649]
Salicylamide	5-40			appr. 1	[8]
Salicylic acid	20-200	300-350	(400-) 500	3-20	[28], [3], [29], [30], [31], [32], [33]
Salvinorin A				40-80 min	[47]
Saquinavir (SQV)	> 0.1-0.25[296]			(1-) 3-7 (-12)	[47], [110], [2], [111]
Scopolamine	0.0001-0.0003 (-0.001)			appr. 3	[15], [8], [11]
Secbutabarbital	5-10 (-15)	20	30	34-42	[8]
Secobarbital	1.5-5	7-10	10-15	15-30	[87], [8]
Selegiline	see Amphetamine and Methamphetamine				

Substance	Blood-plasma concentration (mg/L)			$t_{½}$ (h)	Ref.
	therapeutic ("normal")	toxic (from)	comatose-fatal (from)		
Selenium	0.045-0.13 (-0.19)	0.4-1	2; (2.6[8]; 2.8[8; 304]; 18.4[8]; 38[8])	69-77[6]	[47], [3], [650], [87], [651], [652]
Seratrodast	appr. 3-25				[8]
Sertindole	0.05-0.1	0.2[311]		55-90	[8], [101], [4]
Sertraline	(0.01-) 0.05-0.25	0.29[8]	1.6[8]; 3[8]	24-28 (22-34)	[47], [467], [653], [15], [8], [11], [58], [223]
Sevoflurane	appr. 134[381]		8, 26[8]	1.8-3.8	[47]
Sibutramine[366]	appr. 0.001-0.01			4-8	[47], [8]
Sildenafil	appr. 0.05-0.5			3-5	[3], [15], [8]
Silver	-0.005[367]				[58]
Simvastatin	0.0027-0.0056			appr. 2[290]	[48]
Sirolimus	0.005-0.015[244]	0.015(-0.06)		57-63	[123], [654], [655], [656], [657]
Sisomicin	0.5-10			appr. 1	[8]
Sitagliptin	0.05-0.38			8-14	[47]
Sodium aurothiomalate (gold)	see Gold				
Sodium nitroprusside	see Thiocyanate			0.1	
Sodium oxybate (GHB)	see 4-Hydroxybutyrate				

Substance	Blood-plasma concentration (mg/L)			$t_{½}$ (h)	Ref.
	therapeutic ("normal")	toxic (from)	comatose-fatal (from)		
Sodium valproate	see Valproic acid				
Sotalol[167]	0.5-3 (-4)	7.5-16[8]	40[8]; 43[8]	5-13 (-17)	[658], [70], [7], [659]
Sparteine[48]	0.5-1			2.5	[8]
Spiramycin	appr. –3			5-8	[3], [660]
Spiraprilate	0.006-0.045			33-41	[8]
Spironolactone	(0.05-) 0.1-0.25 (-0.5)[73]			13-24[73]	[8], [11], [58]
Stiripentol	1-10	15(-20)		4-13	[4], [3], [8]
Streptomycin	1-5 (15-40)	40-50		2-4	[467], [8], [11], [58]
Strontium	-0.03			30-60	[47]
Strychnine		0.075-0.1	0.2-2	10-15	[661], [662], [663], [664], [15], [8], [665], [11], [666], [667]
Sufentanil	0.0005-0.01[4]	-[339]	0.001-0.007[8]	1.6-5.7 (7-49)	[47], [668], [669], [670], [344], [346], [671], [54]
Sulbactam	-80			1-2[70]	[174], [3]
Sulfamethoxazole	30-60[56]	200-400		9-12	[3], [672]
Sulfasalazine[34]	5-30 (-70)		130[8;304]	4-10	[8]

Substance	Blood-plasma concentration (mg/L)			$t_{½}$ (h)	Ref.
	therapeutic ("normal")	toxic (from)	comatose-fatal (from)		
Sulfisoxazole	90-100				[48]
Sulfinpyrazone	6-17			3-5	[8]
Sulindac	1-5[102]			appr. 7	[673], [87]
Sulpiride	0.05-0.4 (-1)[225]	1; 5[8]	3.8[8]; 38[8]	4-11 (-14)	[47], [43], [3], [4], [11], [58]
Sultiam (Sulthiame)	0.5-12.5 (2-8)	12-15	20-25	3-30	[491], [8]
Sumatriptan	0.018-0.06			2	[15], [8]
Suramin	> 100[117]	300[118]		44-54	[674]
2,4,5-T	see 2,4,5-Trichloro-phenoxyacetic acid				
Tacrine	appr. 0.01			2-4	[303]
Tacrolimus (FK-506)	0.005-0.015 (-0.02)	(0.015-) 0.02-0.025		9-16	[11], [675], [676], [191], [677], [678], [679], [680], [681], [682], [683], [684]]
Tadalafil	0.09-0.48			16-19	[47]
Talinolol	0.04-0.15		5[8; 129]; 20[8]	10-14	[7], [685], [686]
Talipexole	appr. 0.0001-0.001			5-9	[15], [8]
Tamoxifen	0.05-0.5			5-7[6]	[3]

Substance	Blood-plasma concentration (mg/L)			$t_{½}$ (h)	Ref.
	therapeutic ("normal")	toxic (from)	comatose-fatal (from)		
Tapentadol	0.05-0.13		0.3[8]; 2[8]	3-5	[47]
Taxol	see Paclitaxel				
Teicoplanin	(10-) 15-20 (-40)	200		10-15; 83-168[83]	[687], [688]
Temazepam	0.02-0.15 (-0.9)	1	8.2[8]; 14[8]	6-25	[689], [59], [8], [11], [58]
Tenoxicam[174]	appr. 5-10			(50-) 70-90	[690], [691]
Terazosin	appr. 0.02-0.08			8-12	[15], [8]
Terbinafine	0.01-0.03[205]			22-26	[3], [10], [11], [58]
Terbutaline	0.001-0.006 (-0.01)		0.04	16-20[89]	[8], [11], [58]
Terfenadine[368]	< 0.01	0.04-0.06[148]	0.4[8]	15-22[64]	[47], [3], [692]
Tetrachloroethylene			4-5; 44[8]; 66[8]	33-72	[87], [58]
Tetracycline	1-5 (5-10)	30		6-10	[3], [8], [11]
Tetrazepam[40]	0.05-0.6 (-1)			(10-) 16-44	[47], [59]
Thalidomide	0.5-1.5 (-8)			5-9	[3], [15], [8]
Thallium	-0.002 (-0.0006[331])	0.1-0.5[179]; 5.6[8]	0.5-11	-[6]	[693], [3], [11], [694], [100]
Theobromine	10-15	20		6-10	[11], [58]
Theophylline	(5-) 8-15 (-20)[82]	20	50	6-9[41]	[695], [696], [20], [697], [415], [698],

Substance	Blood-plasma concentration (mg/L)			$t_{½}$ (h)	Ref.
	therapeutic ("normal")	toxic (from)	comatose-fatal (from)		
					[699], [21], [700], [701], [702], [703], [704], [705]
Thiamphenicol	0.5-3-10 (-15)	20		2-7	[15], [8]
Thiamylal	appr. 5		29[8; 304]	0.6-0.8 (initial); 12-34 (terminal)	[47], [87]
Thiazinamium	0.05-0.15	0.3			[467], [15], [8], [11]
Thiocyanate from Nitroprusside	1-12[144] 5-30	35-50 50-100	200	3-4[6]	[706], [3], [255], [11]
Thiopental[57]	1-5	7	10-15[58]	3-8	[707], [48]
Thioproperazine	appr. 0.001-0.02	0.1			[15], [8]
Thioridazine	0.1-2 (0.2-0.8-1.25)[133]	2.5-5	3-10	7-13 (-36)	[56], [4]
Thiothixene	see Tiotixene				
Thyroxine	see Levothyroxine				
Tiagabine	0.01-0.1 (-0.2)	0.5-0.6; 3.1[8; 245]		7-9 (4-13)	[708], [3], [709], [710], [711], [12], [712], [15], [8], [381], [4]
Tiapride	C_{max} 1-2	4[311]		appr. 3-4	[4], [8]
Tiaprofenic acid	appr. 15-40[193]			1.5-3 (-6)	[3], [713], [714]

Substance	Blood-plasma concentration (mg/L)			$t_{½}$ (h)	Ref.
	therapeutic ("normal")	toxic (from)	comatose-fatal (from)		
Ticlopidine	< 1-2 (?)			70-130[100]	[47], [8]
Tiletamine			0.85[8; 304]		[87]
Tilidine[25]	0.05-0.12	-[339]	1.7[8]	appr. 3	[715], [716], [15]
Tiludronate (Tiludronic acid)	0.2-1.5			65-78 (-150)	[49], [717]
Timolol	0.005-0.05 (-0.1)			2-6	[8]
Tin	0.03-0.14				[58]
Tinidazol	max. -60			11-15	[3]
Tiopronin	appr. 2-5			23 ± 11	[718]
Tiotixene	0.001-0.03 (0.002-0.014)	0.1		34-36	[185], [48]
Tiotropium	0.000016[307]			5-6[6]	[719]
Tipranavir (TPV)	> 20.5[299]			5.5-6	[110], [2], [111]
Tizanidine	appr. 0.015			appr. 2.5	[3], [8]
Tobramycin	4-10[154]	12-15		2-3	[67], [3], [198], [41]
Tocainide	4-12 (6-10)	13-15; 20[8]	74[8]; 78[8]; 140[8]	8-25	[47], [3], [720], [721]
Tofenacine	0.025-0.1	0.5-1			[9], [58]
Tolbutamide	45-100	400-500	640[8]	4-12	[722], [11], [58]

Substance	Blood-plasma concentration (mg/L)			$t_{½}$ (h)	Ref.
	therapeutic ("normal")	toxic (from)	comatose-fatal (from)		
Tolcapone	C_{max} 3-6	12[311]		2	[4]
Tolmetin	10-80			2-4	[11], [58]
Tolperisone	0.09-0.3	0.7[8; 382]	7-14	1.8-2.9	[47]
Toluene			10 (-48[8])	13-68	[47], [58]
Topiramate	2-10[218]	16[311]		20-30	[712], [15], [8], [381]
Topotecan	appr. 0.001-0.01[190]			2-3	[3], [723], [724]
Tramadol[48]	0.1-1 (>0.3)[87]	1	2[8; 49]; 13[8]; 38.3[8; 252]	5-10	[11], [244], [725], [726], [63]
Tranexamic acid	10-50			10	[8]
Tranylcypromine	< 0.05	0.1[311]; 0.5[8; 202]	0.7[8]; 5[8]	1-3.5	[4], [727]
Trapidil	(4-) 6-10			2-6, 12	[3], [95], [728]
Trazodone[145]	0.7-1	1.2[311]; 3-4	12-15[8]	4-11 (-13)	[43], [4], [729], [64]
Triamterene	0.01-0.1			1.5-4	[3], [42]
Triazolam	0.002-0.02	0.04		2-5	[730], [59], [423]
2,2,2-Tribromoethanol		50	90		[58]
1,1,1-Trichloroethane			(15[8]); 100-1000	appr. 53	[11], [58]

Substance	Blood-plasma concentration (mg/L)			$t_{½}$ (h)	Ref.
	therapeutic ("normal")	toxic (from)	comatose-fatal (from)		
2,2,2-Trichloroethanol[369]	5-15	40-70	60-100	6-10[327]	[47], [11], [58]
Trichloroethylene			9.7[8]; 16[8]; 21[8]	30-38	[87]
2,4,5-Trichlorophenoxyacetic acid (2,4,5-T)	-	appr. 100	200	23-33	[3], [11]
Trifluoperazine	0.001-0.01 (-0.05)	0.1-0.2	0.4[8]	7-18	[87], [8]
Triflupromazine	0.03-0.1	0.3-0.5		appr. 6	[8]
Trihexyphenidyl	0.05-0.2[75]	0.5		3-5	[9], [114]
Trimeprazine	see Alimemazine				
Trimethadione[274]	20-40			16	[11], [58]
Trimethobenzamide	1-2		184[8]	7-9	[47], [11], [58]
Trimethoprim	1.5-2.5[56]	20		8-11	[3], [672]
Trimipramine	0.01-0.3	0.6[311]	1.7-8.2[251]	10-20 (-40)	[56], [4], [223]
Tripelenamine	0.02-0.06		10[8]	5-8	[87], [15], [8], [57], [11]
Triprolidine	0.004-0.045			2-5	[57]
Tropisetron	0.02-0.05			7-9 (-30)	[66], [8]
Tubocurarine	0.04-6			2-4	[48], [8], [58]
Tungsten	-0.035				
Uranium	0.00004[331]				

Substance	Blood-plasma concentration (mg/L)			$t_{½}$ (h)	Ref.
	therapeutic ("normal")	toxic (from)	comatose-fatal (from)		
Urapidil	appr. 0.1-0.2			2.7-7	[3], [95]
Valdetamide	see Diethylpentenamide				
Valnoctamide	5-25	40			[58]
Valproic acid	40-100 (50-150)	150-200	556[8]; 720[8]	8-20	[47], [161], [164], [64]
Valsartan	appr. 0.8-6			6-9	[8]
Vanadium	-0.05			4-12[6]	[47]
Vancomycin	≤ 5-10 (-12)[142]	30		2.6-11[83]	[47], [67]. 1994), [390], [731], [732], [733], [734], [735], [736], [64]
Varenicline	0.004-0.005	0.01[311]		24	[4]
Vecuronium	appr. 0.2-0.37 (-0.5)			1-1.5	[3], [9]
Venlafaxine	0.1-0.4[189]	1-1.5[266]	6.1-24[8]	3-7	[47], [101], [4], [737], [11], [58], [223]
Verapamil[90]	(0.01-) 0.02-0.25 (-0.4)	1	2.5 ; 3.9[8]	6-14[42]	[56], [84], [721], [738], [739], [64]
Vigabatrin	2-10 (-15)[94]	20[311]		5-8	[47], [381], [64]
Viloxazine	-6.0-8.0 (?)		45[8]	2-5	[43], [3], [15],

Substance	Blood-plasma concentration (mg/L)			$t_{½}$ (h)	Ref.
	therapeutic ("normal")	toxic (from)	comatose-fatal (from)		
					[8]
Vincamine	< 0.25 (?)			1-2 (8-17)	[8]
Vinylbital	1-3	5	8	18-33	[8]
Viquidil	0.15-0.25			6-12	[11], [58]
Vitamin A	see Retinol				
Vitamin C	see Ascorbic acid				
Vitamin D	(0.02-) 0.03-0.09[263]	0.2		appr. 30[6]	[740], [741], [742], [743]
Voriconazole	2-6	3.5 (-6.0)[284]		4-10[37]	[47], [603], [744], [745]
Warfarin	1-3 (-7)	10-12	100	37-50[97]	[3], [42], [14], [746]
Wismut	see Bismut(h)				
Xamoterol	appr. 0.02-0.04 (-0.1)			7-8	[3]
Xipamide	-20			5-8	[3]
Xylene	1.5 (BAT		3-40	20-30	[47], [11], [58]
Yohimbine	appr. 0.05-0.3			1-3	[64], [15], [8]
Zafirlukast	0.005-0.03			10	[3], [15], [8]
Zalcitabine	appr. 0.1 (0.5 µmol/L)			1-3[83]	[290], [38]
Zaleplon	appr. 0.001-0.1			1	[8]

Substance	Blood-plasma concentration (mg/L)			$t_{½}$ (h)	Ref.
	therapeutic ("normal")	toxic (from)	comatose-fatal (from)		
Zanoterone	0.1-0.5				[747]
Zidovudine	0.1-0.3 (-1)[51]	2-3		1-1.5	[290], [748], [749], [3] [750], [38],[2]
Zinc	0.6-1.3	2	42[8]	5-16 months	[47], [66]
Zipeprol	0.1-0.7		5.8[8]; 10.6[8] ; 31[8]	1.2	[47], [57]
Ziprasidone	0.05-0.2	0.4[311]		2-7	[4], [3], [15], [8]
Zoledronat (Zoledronic acid)				(1-2) 40-385 (-189[6])	[49], [751], [752], [753]
Zolmitriptan	appr. 0.007-0.01			2.5-3	[15], [8]
Zolpidem	0.08-0.15 (-0.2)	0.5	2-4	2-3	[754], ([56], [755], [3], [310], [15], [11]. [756]
Zomepirac	0.1-4		152[8]	4-10	[8], [87]
Zonisamide	10--40	40-70	100[208]	50-70[209]	[8], [757], [758],[712], [381]
Zopiclone	0.01-0.05	0.15	0.6-1.8	3.5-8	[56], ([3], [4], [15], [11]
Zotepine	0.01-0.15	0.3[311]		13-16	[3], [4]
Zuclopenthixol[48; 365]	0.004-0.05 (-0.1)	0.1-0.3		15-25	[4], [15], [14]

Clinical categories used for grouping analytical data:
Therapeutic: blood-plasma/serum concentrations (in general, trough at steady state) observed following therapeutically effective doses; no or only minimal side effects (drugs); “normal”: concentrations associated with no or only minimal toxic effects (other xenobiotics).
Toxic: blood-plasma/serum concentrations which produce toxicity/clinically relevant side effects/symptoms.
Comatose-fatal: blood-plasma/serum (comatose) concentrations and whole blood (fatal) concentrations reported to have caused coma and death, respectively. Whether published data for deaths refer to levels measured ante-mortem or post-mortem (femoral or heart blood) is often unknown.
In addition to specific references provided in the table, data were compared and contrasted against published review articles and textbooks [3,4,7-15,41-43,47,48,56-59,64,66,74,87,88,259,270,294,467,759-779] but not specifically indicated for every drug/substance, as well as supplemented with our experiences in clinical and forensic toxicology.

Abbreviations: BAT, biological tolerance value (in the work area); rec, recombinant; Ref., references; $t_{½}$, in general, terminal elimination half-life (if not stated otherwise, see annotations)
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Annotations to Table 1

1 active metabolites of acebutolol: N-acetylacebutolol ($t_{½}$: 9-14 h): therapeutic concentration 1-2.5 mg/L, comatose-fatal from appr. 90 mg/L, and diacetolol ($t_{½}$: 8-13 h): therapeutic 0.65-4.5 mg/L, comatose-fatal from appr. 100 mg/L

2 as salicylic acid (for analgesic and antipyretic effect)

3 as digoxin

4 during mechanical ventilation

5 slow (poor) and rapid (extensive) acetylators (metabolisers)

6 days

7 active metabolites nortriptyline (see Table) and amitriptyline oxide ($t_{½}$: 1.5-3 h)

8 case report

9 in patients with impaired renal function in some cases up to 100 h

10 active metabolite 6-mercaptopurine ($t_{½}$: 1-1.5 h)

11 appr. 0.2 h for azathioprine

12 active metabolite carbamazepine-10,11-epoxide ($t_{½}$: 5-16 h; usual plasma concentration range 0.2-2 mg/L) should be considered in case of intoxication

13 each sum carbromal(um) + carbromide ($t_{½}$: 12-15 days)

14 each as trichloroethanol

15 active metabolite desmethyldiazepam = nordazepam (see Table)

16 nephrotoxic

17 active metabolite N-desmethylclobazam (therapeutic reference range: 0.3-3 mg/L; laboratory alert level[311] 5 mg/L)

18 duration of pharmacological effects: 0.3-0.4 h; major metabolite: benzoylecgonine ($t_{½}$: 5-6 h)

19 active metabolites nordazepam and oxazepam (see Table)

20 active metabolite nordothiepin ($t_{½}$: 20-60 h)

21 active metabolite desmethyldoxepin (synonym nordoxepin, $t_{½}$: 33-80 h)

should be considered in case of intoxication

22 benzodiazepine antagonist

23 active metabolites

24 active metabolite desalkylflurazepam ($t_{½}$: 74 ± 24 h)

25 active metabolite nortilidine ($t_{½}$: 6 h), comatose-fatal plasma concentration: 4.4 mg/L[8]

26 in some cases up to 80 h

27 active metabolite levomepromazine sulfoxide ($t_{½}$: 5-10 h)

28 $t_{½}$ for biological effects; terminal $t_{½}$:16-78 h

29 active metabolite desipramine (see Table)

30 active metabolites diazepam, nordazepam plus oxazepam (see Table)

31 active metabolite of mesuximide

32 sum of active metabolites

33 each as desacetylmetipranolol

34 active metabolite 5-aminosalicylic acid (mesalazine, see Table); rapid/slow acetylators of the primary metabolite sulfapyridine

35 in some cases longer

36 active metabolite oxyphenbutazone ($t_{½}$: 27-64 h)

37 dose dependent

38 active metabolite of procainamide

39 for the management of osteoporosis

40 active metabolites diazepam (see Table), nordiazepam (see Table), and nortetrazepam ($t_{½}$: 25-51 h)

41 smokers: $t_{½}$: 3-6 h

42 during steady state

43 astemizole plus desmethylastemizole

44 blood drug concentrations following therapeutically effective doses below detection limit

45 as decanoate ($t_{½}$: 5-12 days)

46 in intensive care patients in some cases $t_{½}$ 8-22 h

47 physiologic

48 rapid (extensive, EM) and slow (poor) metabolisers (PM; genetic polymorphism)

49 6 month-old-child, appr. 15 h after 100 mg tramadol rectally

50 total labetalol: 0.7-5.0 mg/L

51 C_{max} 0.038 ± 0.006 mg/L after a single oral dose of 150 µg/kg in nine persons with onchocerciasis ($t_{½}$: 56 ± 7 h)

52 as enalaprilat

53 duration of clinical effect: 3-5 h

54 product after hydrolysis

55 narcotic; analyzed during distribution phase

56 for pneumocystis carinii pneumonia (PcP) treatment: sulfamethoxazole 100-200 mg/L, trimethoprim 5-10 mg/L

57 metabolite: pentobarbital (see Table)

58 “narcotic”

59 higher with meningism (-25 mg/L); decreased protein binding in neonates results in increased unbound drug

60 each as 2-hydroxyflutamide (active and major metabolite)

61 active metabolite of allopurinol

62 active metabolite paracetamol (synonym acetaminophen, see Table)

63 active metabolites phenobarbital (see Table) and phenylethylmalonide (7-10 mg/L; $t_{½}$: 16-50 h)

64 as active carboxylic acid metabolite = fexofenadine ($t_{½}$: mean 15 h)

65 1 mg oral alprazolam/day equals appr. a plasma concentration of 0.01 mg alprazolam/L during steady state. Usually higher doses/plasma concentrations are recommended for the treatment of phobias when compared to panic disorder/attacks

66 highly inter- and intraindividual variable kinetics; for children

(therapeutically): 0.04-0.1 mg/L; active metabolite desmethylchlorpromazine

67 ≥ 0.25 µmol/L desirable for echinococcosis

68 mean: 27 h; for geriatric patients (> 65 years) in some cases increased to more than 90 h

69 active metabolite 2-hydroxydesipramine ($t_{½}$: mean 18 h; in patients with impaired renal function several fold increased)

70 in patients with impaired renal function several fold increased

71 in colon tissue 0.8-1.8 h after 1 x 2 g i.v.: 94.0-7.4 µg/g

72 active metabolites 1-(5-hydroxyhexyl)-3,7-dimethylxanthine and 1-(3-carboxypropyl)-3,7-dimethylxanthine ($t_{½}$: 1-1.6 h), among others, with 5 and 8 times, respectively, higher plasma levels than pentoxifylline

73 as canrenone (one of the active metabolites of spironolactone, $t_{½}$: 1.3-1.4 h)

74 appr. 8 h after ingestion of probably 210 mg haloperidol and 1400 mg orphenadrine-HCl with life-threatening arrhythmias

75 data on effective plasma concentrations for Parkinson's disease not proven

76 peak: 20-30 mg/L, trough: < 7 mg/L

77 for hypertension: 0.2-0.45 mg/L; for angina/coronary heart disease or arrhythmias: 0.3-0.8 mg/L

78 therapeutic concentration of the unbound fraction: 0.5-2 mg/L; therapeutic concentration of the metabolite desalkyldisopyramide < 5 mg/L (ratio of metabolite to the parent compound disopyramide guide to duration of therapy and possibly to the likelihood of toxicity)

79 in mmol/L (mEq/L, mval/L): 0.4-1.2 (0.6-1.4), toxic from 1.5 mmol/L

80 terminal elimination $t_{½}$: 37 ± 6 h, increased in case of renal dysfunction

81 therapeutic concentration of the unbound fraction: 1-2.2 mg/L

82 for (sleep) apnea: 5-10 mg/L

83 increased in patients with impaired renal function

84 C_{max} 3-5 h after 4 mg loperamide hydrochloride orally: 1-3 ng/mL

85 active metabolite N-desmethylclomipramine ($t_{½}$: 21-65 h, mean: 40 h)

86 12-36 h

87 post-operative (on-demand; i.v.): 0.02-1-2 mg/L (median: 0.29-0.92 mg/L) as minimal (analgesic) effective concentration; O-desmethyltramadol: 0.03-0.04 mg/L (median: 0.036 mg/L)

88 10-36 h

89 11-26 h

90 stereoselective metabolism (therapeutic concentration after oral application higher than after intravenous administration)

91 $t_{½}$ for ß-phase of the elimination: 0.5-1 h

92 as albendazole sulfoxide (active metabolite)

93 $t_{½}$ in slow (poor) metabolisers appr. 40 h

94 trough plasma concentration at steady state during 2 g twice daily orally (p.o.) appr. 9 mg/L; C_{max} (0.8 h after 1 g orally): appr. 45 mg/L

95 as active metabolite methimazole (thiamazole)

96 mean 80 min

97 15-85 h

98 plasma concentrations do not correspond with pharmacological effects

99 naltrexone plus 6-ß-naltrexone: 0.025-0.1 mg/L; plasma concentrations of the less potent major metabolite 6-ß-naltrexol ($t_{½}$: 11-13 h) are usually 1.5-10 times higher

100 at steady state; 4-15 h after a single dose

101 sum rifampicin plus metabolites

102 sum sulindac plus metabolites (sulindac sulfide, $t_{½}$: 15-18 h; $t_{½}$ sulindac sulfone: 17-20 h)

103 abuse

104 sum carisoprodol plus meprobamate

105 12-15 days for the metabolites

106 $t_{½}$ for total platinum plasma concentrations: 20-40 h (up to 6-7 days)

107 2-20 µmol/L

108 carboxylic acid metabolite ($t_{½}$: appr. 20 days): 1.5-5.5 mg/L

109 during concomitant therapy with carbamazepine or phenytoin 13.5 -15 (8-33) h, during concomitant therapy with valproic acid 48-59 (31-89) h

110 in infants and after intoxications in some cases dramatically increased

111 during steady state 3-4 h after oral doses of 100-400 mg; prophylaxis of candidiasis: > 0.2 mg/L and of aspergillosis: > 1.0 mg/L in patients with acute myeloid leukemia (AML)

112 plasma concentrations of the major metabolite 13-cis-acitretin are usually higher

113 higher and increased, respectively, in patients with impaired hepatic function; for tinnitus aurium: therapeutic plasma concentration appr. 1-2 mg/L

114 biologically active/major metabolite cycloguanil ($t_{½}$: 8-17 h): plasma concentration after daily oral doses of 100-200 mg proguanil appr. 0.02-0.06 mg/L

115 active metabolite norpethidine ($t_{½}$: 14-24 (-48) h): toxic from appr. 0.5 mg/L

116 tremor, hypokalemia

117 as cytostatic drug: >200 mg/L

118 neurotoxic

119 in terminal renal insufficiency appr. 0.5-2 mg/L, cumulation of the inactive metabolite N-acetyl-5-aminosalicylic acid (Ac-5-ASA) up to 20 mg/L without adverse effects

120 $t_{½}$ of the inactive major metabolite N-acetyl-5-aminosalicylic acid (Ac-5-ASA) appr. 6-9 h

121 tocolytic (4.5-6.25 mval(mEq)/L, 2.25-3.125 mmol/L). Approximate normal range: 18-25 µg Mg^{2+}/mL (0.74-1.03 mmol/L); conversion factor: mg/dL x 0.4113 = mmol/L

122 C_{max} appr. 2-8 µmol/L (i.e. 1.7-6.8 mg/L, after 170-275 mg/m^2 intravenously for 6 h); much lower after intraperitoneal injection

123 as transdermal system (patch); plasma concentrations of the major metabolite cotinine ($t_{½}$: mean 16-20 h) appr. 10 times higher

124 mean 2 h; after application of the transdermal system possibly longer

125 active metabolites desipramine (see Table), 2-hydroxyimipramine ($t_{½}$: 6-18 h), and 2-hydroxydesipramine[69]

126 3-7 min after retrobulbar blockade: 0.5-1.1 mg/L

127 for myasthenia gravis

128 half maximal effective concentration (EC_{50}) for analgesia: 0.0088 ± 0.0053 mg/L; EC_{50} for respiratory depression: 0.035 ± 0.022 mg/L

129 appr. 14 h after oral ingestion of 1.5 g

130 fluoxetine plus norfluoxetine; $t_{½}$ of the active metabolite norfluoxetine: 4-16, mean 7-9 days

131 active metabolites 2-oxoquazepam ($t_{½}$: 39 (28-43) h) and N-desalkyl-2-oxoquazepam (N-desalkylflurazepam, $t_{½}$: 74 ± 24 h)

132 peak plasma concentration during steady state

133 range of plasma concentrations after therapeutically effective doses of thioridazine for the active metabolites mesoridazine (thioridazine-2-sulfoxide): 0.2-1.6 mg/L ($t_{½}$: 10-14 h) and sulforidazine (thioridazine-2-sulfone): up to 0.6 mg/L ($t_{½}$: 10-16 h) and for the inactive metabolite thioridazine-5(ring)-sulfoxide: 0.06-4 mg/L; probably, the best correlation exists between the plasma concentration of mesoridazine and the clinical response

134 usually sleep occurred with ≥ 0.1 mg/L; in infants and children (< 13 years): in some cases during mechanical ventilation up to 3 mg/L; α-hydroxymidazolam-glucuronide likely contributes in case of impaired renal function to prolonged sedation

135 plasma concentration range of the primary metabolite 1,5-dimethyl-3,3-diphenyl-2-ethylidene-pyrrolidine (EDDP) during steady state: 0.005-0.055 mg/L (daily oral methadone dose: 10-225 mg, mean 60 mg)

136 ratio clozapine/active metabolite N-desmethylclozapine (= norclozapine, $t_{½}$: 19.2 ± 10.2 h) usually 1.0-2.5

137 maximum antiemetic effect at > 0.01 mg/L

138 active metabolite descarboethoxyloratadine ($t_{½}$: 17-24 h): appr. 0.005-0.02 mg/L

139 0.15 ± 0.05 ‰ per h

140 during chronic administration appr. 10-20 h (induction of own metabolism)

141 caution is warranted in case of concomitant use or intoxication with serotonin reuptake inhibitors (SSRI) such as citalopram, clomipramine (fluoxetine, paroxetine): possible serotonin syndrome

142 trough concentration; peak concentration: < 40 mg/L

143 distribution half-life: 0.3-0.5 (-1) h

144 non-smoker: 1-4 mg/L (17-69 µmol/L); smoker: 3-12 mg/L (52-206 µmol/L)

145 major active metabolite 1-m-chlorophenylpiperazine; plasma concentration appr. 1/10 compared to trazodone

146 plasma concentration for maximal cellular accumulation of the active form gemcitabine-5'-triphosphate

147 after topical nasal or ocular administration

148 Torsade de pointes, usually due to cytochrome P450 3A4 inhibition (e.g., ketoconazole, erythromycin) and/or impaired hepatic function

149 after oral administration; after topical application: plasma concentration < 0.03 mg/L and $t_{½}$ appr. 22 h

150 for each added 1 mg/day dose of clonazepam, there is appr. an increase of 12 ng/mL in the plasma (patients with panic disorder)

151 Sum of amoxapine and his major metabolite 8-hydroxyamoxapine ($t_{½}$: appr. 30 h; $t_{½}$ 7-hydroxyamoxapine: 4-6.5 h)

152 sum bupropion (amfebutamone) and morpholinole metabolite ($t_{½}$: 19-22 h)

153 after i.m.-application as decanoate appr. 3 weeks

154 C_{min} < 1-2 mg/L at best (especially in patients with renal dysfunction)

155 appr. 0.02 mg/L in organophosphorous ester poisoning depending on clinical symptoms

156 in case of organophosphorous ester (e.g. parathione) intoxication; 250 mg intravenously as bolus followed by an infusion of 750 mg/24 h

157 if used as an antiarrhythmic appr. 0.1-0.4 mg/L

158 using daily oral doses of ≤ 25 mg 0.00046 mg risperidone/L per mg dose and 0.0064 mg/L per mg dose for risperidone plus 9-hydroxyrisperidone (the clinical effects likely results from the combined concentrations)

159 extensive metabolisers; $t_{½}$ for poor metabolisers: 20 h; $t_{½}$ for risperidone plus 9-hydroxyrisperidone: 22-24 h

160 6 case reports: post mortem 5.2-49 µg citalopram/g blood and 0.3-1.4 µg desmethylcitalopram/g blood

161 concentration/dose-values for extensive metabolisers: 0.025-0.688 (median 0.098) nmol/L per mg oral perphenazine, and 0.096-0.750 (median 0.195) nmol/L per mg oral perphenazine (mol wt 506.07) for poor metabolisers, respectively

162 two cases after ingestion of appr. 4 g moclobemide in combination with clomipramine (plasma concentration: 0.3-0.5 mg/L, i.e. toxic)

163 as R-enantiomer, mean: 9 mg/L

164 dosage: 50-55 mg/kg per day

165 appr. 2.5 h after ingestion of 50-100 mg amlodipine besylate with alcohol (263 mmol ethanol/L)

166 0.101 mg/L 4 h after ingestion of 70 mg and 0.185 mg/L at 10.5 h, complicated by oxazepam ingestion

167 data for d,l-sotalol

168 after i.v.-application; $t_{½}$: 4-7 h following epidural administration (appr. 4-5 h following intercostal block and appr. 8 h following brachial plexus blockade, respectively)

169 mean 19 h; $t_{½}$ of oral ciclosporine microemulsion is appr. 8 h

170 a longer $t_{½}$, up to 3.8 days, has been reported in elderly patients, up to 3.8 days

171 target range of activated partial thromboplastin time (aPTT) is prolongation of 50-70 sec; aPTT prolongation of more than 100 seconds has been associated with an increased risk of hemorrhagic events

172 as 10-hydroxycarbazepine for seizures (0.4-2 mg/L for oxcarbazepine) ; in patients with trigeminal neuralgia, therapeutic target range of the active metabolite 10-hydroxycarbazepine ($t_{½}$: 7-14 (-20) h): 50-110 µmol/L (appr. 13-28 mg/L)

173 mild CNS symptoms (limited data)

174 pharmacologically inactive metabolites 5’ and 6’-hydroxytenoxicam

175 effective plasma concentrations for the 2 active metabolites: O-desmethylencainide (0.05-0.3; toxic from 0.3 mg/L, $t_{½}$: 11 h) and 3-methoxy-o-desmethylencainide (0.06-0.28 mg/L; $t_{½}$: > 24 h) during long-term therapy

176 in poor metabolisers 9-11 h

177 “normal”: 0.001-0.006; smoker: 0.005-0.012 (-0.15) mg/L; µmol/L x 0.026 = mg/L

178 reference value; 0.001 µg/g creatinine or 0.0014 mg/L urine; < 30 µg/24 h urine (“normal”); “toxic” from appr. 0.05-0.3 mg/L urine. Reference value for children in Germany: 0.0008 mg/L blood and 0.0004 mg/L urine

179 > 0.04 mg/L urine

180 up to years in chronically exposed workers

181 combination with 2,4-D and chlorpyrifos

182 in case of intoxication/overdose: 70-90 h

183 overdose

184 one case of toxicokinetic estimation in acute potassium cyanide (KCN) poisoning

185 dependent on indication; > 2.0 mg/L for partiell seizures; tentative target range according to Neels HM et al. 2004: 12-20 mg/L; peak concentration at steady state appr. 4.6 mg/L (300 mg three times daily (tid)) and appr. 8.4 mg/L (600 mg tid)

186 prolonged in case of impaired renal function to 16-43 h; > 100 h in dialysis dependent patients

187 dependent on urine pH, if alkaline appr. 8-10 h

188 females showed significantly longer elimination half-lives (35.4 ± 13.7 h) than males (mean 21-26 h); the $t_{½}$ of the R(-)-enantiomer is twice that of the S(+)-enantiomer

189 venlafaxine plus O-desmethylvenlafaxine. After doses of 25, 75, and 150 mg every 8 h for 3 days, mean peak serum levels were 0.053, 0.167, and 0.393 mg/L; corresponding levels of the major active metabolite O-desmethylvenlafaxine ($t_{½}$: 10-11 h) were 0.148, 0.397, and 0.686 mg/L

190 at least 10 nmol of the lactone (mol wt 421.46)/L; decreases in absolute neutrophil counts of 50-90 % were observed with steady state plasma concentrations of total topotecan (lactone + hydroxy acid) of 20-60 nmol/L, respectively

191 a mean steady state peak plasma concentration of 0.286 mg/L was observed in healthy volunteers after 60 mg (oral solution) every 12 hours for 10 doses

192 the metabolite 2’,2’-difluorodeoxyuridine (dFdU) has minimal antitumor

activity but may contribute to the toxicity of gemcitabine

193 C_{max} after 200 mg three times daily (tid)

194 serum concentration of benzoic acid following high dose diazepam i.v.-infusion and severe metabolic acidosis (5-year-old girl; urine concentration: 1,200 mg/L)

195 1.5 h in dogs after i.v.-administration

196 for erythropoietic protoporphyria (EPP)

197 trough; peak: 0.1-0.5 mg/L

198 + 0.4 mg of its metabolite 3-deacetylpancuronium/L

199 “normal”: ≤ 2-3 % of total Hb; from 15-20 %: cyanosis, headache, dizziness

200 “normal”: ≤ 5 % hemoglobin as carboxyhemoglobin (elderly: -15 %); smoker: 8-10 %

201 2 h after ingestion

202 3 h after ingestion of 400 mg with no severe symptoms

203 mean steady state trough concentration; peak concentration: 5-15 mg/L

204 for Parkinson’s disease (appr. 15-50 pmol/mL)

205 peak: 0.5-3 mg/L

206 plasma concentrations below detection limit; plasma concentrations of the active metabolite 6-methoxy-2-naphthylacetic acid ($t_{½}$: appr. 24 h), which appears to be responsible for the effects, were 10-37 mg/L 3-6 h after single oral doses of 250, 500, and 1000 mg, respectively

207 active metabolite 6-O-desmethyldonepezil

208 coma in a patient overdosing zonisamide, carbamazepine, and clonazepam

209 25-30 h in patients co-medicated with enzyme-inducing anticonvulsants (e.g. phenobarbital)

210 2-4 h in patients co-medicated with enzyme-inducing anticonvulsants (e.g. phenobarbital)

211 renal-transplant patients treated long-term (2-3 years) with mycophenolate mofetil had significantly lower trough plasma concentrations of the active metabolite mycophenolic acid (1.94 ± 0.24 mg/L) when compared to patients taking mycophenolate mofetil (1 g twice daily) short-term (2-10

months; 3.53 ± 0.45 mg/L). Proposed mycophenolic acid pre-dose target concentration: 1-3.5 mg/L

212 as mycophenolic acid (active metabolite)

213 ten men with multiple sclerosis, 10-20 mg p.o. every 6 h and analyzed 30 min before the next dose; peak levels < 0.1 mg/L 30 min after a dose

214 nine patients, maximum tolerated oral dose 50-100 mg

215 $t_{½}$ of the metabolite 3-O-methyldopa: 15 h

216 appr. 2.5 µmol/l (1 mg/L) 24 h after single doses of 100-800 mg and during daily treatment with 200 mg

217 active metabolite 14-hydroxyclarithomycin ($t_{½}$: 5-7 h)

218 C_{max} following oral administration of 200, 400, 800, and 1200 mg, respectively: 3.7, 8, 18, and 29 mg/L; tentative target range according to Neels et al., 2004: 5-25 mg/L

219 at a daily dosage of 60, 120, and 240 mg the mean ± SD concentration in patients with symptomatic ventricular tachyarrhythmias (n = 9-18) was 75 ± 46, 144 ± 105, and 324 ± 180 nmol/L, respectively

220 nonlinear kinetics

221 appr. 5 h after ingestion of 3 g, not associated with severe toxicity to a 27-year-old woman

222 slightly increased (8-12 h) in patients with impaired hepatic function; active metabolites hydroxynefazodone ($t_{½}$: 2-5 h), m-chlorophenyl-piperazine ($t_{½}$: 4-10 h), and triazoledione ($t_{½}$: 10-12 h)

223 each as N-desmethylsuximide; methsuximide ($t_{½}$: 1-2 h) steady state concentration: appr. 0.04-0.08 mg/L

224 mean steady state trough concentration in 15 young adults receiving a daily dose of 0.47-1.71 mg isotretinoin/kg: 0.05-0.34 mg/L ($t_{½}$: 29 ± 40 h), and for the 4-oxo metabolite ($t_{½}$: 22 ±10 h): 0.16-0.68 mg/L

225 for depression; higher in case of schizophrenia (0.2-1 mg/L)

226 suggested threshold for the sum of clomipramine (0.05-0.06 mg/L) and N-desmethylclomipramine (0.16-0.18 mg/L): 0.2-0.24 mg/L

227 for the active metabolite E-3174 ($t_{½}$: 4-9 h); plasma concentration of losartan producing 50 % of maximal blood pressure response to exogenous angiotensin-II: 0.032 mg/L

228 as ramiprilat ($t_{½}$: 13-17 (50-110) h)

229 half maximal inhibitory concentration (IC_{50}) for analgesic effect after oral surgery

230 the inhibitory concentration to reduce the level of extracellular hepatitis B DNA by 50 % varied from 2.3 µg/L to 1.3 mg/L; C_{max} after 150 – 300 mg *per os* (p.o.): 1.2-2.0 mg/L

231 C_{max} at steady state (666 mg three times daily (tid) *per os* (p.o.)*)*

232 after oral administration of the enteric-coated tablet

233 trough < 2 plus peak 6-10 (5-12) mg/L

234 reference value; < 0.015 mg/L urine

235 active metabolite 4'-hydroxynimesulide ($t_{½}$: 3-9 h)

236 mean C_{max} 126.5 and 226.3 ng/mL 2 h after 75 and 125 mg p.o. and 162.9 and 291.8 ng/mL after oral administration of 1.0 and 1.6 mg MDMA/kg body weight, respectively, to young adults; mean C_{max} for the metabolites 4-hydroxy-3-methoxymethamphetamine (HMMA) 171.9 and 173.5 ng/mL, 3,4-methylenedioxymethamphetamine (MDA) 8.4 and 13.8 ng/mL, and 4-hydroxy-3-methoxyamphetamine (HMA) 3.5 and 3.9 ng/mL, respectively

237 in patients > 60 years prolonged up to 10 h

238 adjuvant in methadone maintenance therapy

239 means of the 'average' steady state plasma concentration for the relatively high dose of 250 mg q8h (every 8 hours) appr. 0.4-0.6 mg/L

240 combination of distribution and elimination processes

241 as active metabolite fenofibric acid

242 appr. 37.5 mmol/L (=mval/L, mEq/L)

243 steady state concentration 21.6 ± 14.2 mg/L (mean ± SD) during continuous infusion of 3 g (1.1-2.2 mg/kg h) every 24 hours in 44 patients undergoing coronary artery bypass graft surgery

244 target trough concentration if ciclosporine is being used at trough concentrations of 0.075-0.15 mg/L; without ciclosporine: appr. 0.03 mg/L (LC/UV assay)

245 4 hours after ingestion of 30-40 tiagabine HCl 8 mg tablets (coma)

246 bupropion plus 10-hydroxybupropion ($t_{½}$: 17-47 h)

247 calculated steady state concentration in children (4 months to 16 years) receiving 0.3 mg/kg body weight i.v.

248 femoral blood concentration of the metabolite desmethylalimemazine after fatal intoxication: 0.2-1.3 µg/g

249 40-50 min after 0.15 mg/kg i.v.

250 femoral blood concentration of the metabolite desmethylpromethazine after fatal intoxication (n=3): 0.3-1.8 µg/g

251 femoral blood concentration of the metabolite desmethyltrimipramine after fatal intoxication (n=10): 0.3-2.5 µg/g

252 fatal overdose with tramadol, alprazolam (0.21 mg/L), and alcohol (1.29 g/kg) in a 30-year-old woman

253 enterohepatic circulation; prolonged in elderly subjects to 33.4 hours (range: 20.0-53.4 h)

254 C_{min}/D [(ng/mL)/mg], i.e. dose-normalized trough plasma drug concentration, dosage interval 8 h

255 all data refer to the active metabolite A771726

256 steady state concentrations at 5, 10, and 25 mg/d, respectively

257 steady state trough concentrations after 400 mg/d orally; two major metabolites modafinil acid (appr. 0.5-0.8 mg/L, $t_{½}$: 7.3 ± 1.1 h) and modafinil sulfone (appr. 4.5-5.3 mg/L), but neither appears to contribute to the wake-promoting properties of modafinil

258 mean plasma trough concentration at steady state obtained from 400 mg imatinib/day in 83 adult patients with chronic phase CML; peak: 2.3 mg/L

259 in a 5-year-old girl

260 suggested minimum target trough concentration in patients with HIV-1 susceptible to the antiretroviral (ARV) drug (dose of 800 mg two times daily (bid))

261 active metabolite N-desethylamiodarone ($t_{½}$: 57-64 days), which achieves plasma concentrations similar to the parent compound

262 inactive metabolites deshydroxyethyl opipramol ($t_{½}$: 97 ± 24 h) and opipramol N-oxide ($t_{½}$: 10.7 ± 3.2 h)

263 as 25-hydroxyvitamin D (25(OH)D, calcidiol); vitamin D deficient: < 0.01 mg/L (< 10 ng/mL = 25 nmol/L); vitamin D insufficient: < 0.02 – 0.03 mg/L (50-75 nmol/L); conversion factor: mg/L x 2,500 = nmol/L (ng/mL x 2.5 = nmol/L)

264 6 h after reportedly ingestion of 30 g in a 38-year-old woman

265 metabolite perindoprilat, 3 to 10 hours, with a prolonged terminal half-life

between 25 to 120 h

266 sum venlafaxine and O-desmethylvenlafaxine

267 for glaucoma 4-5 mg/L

268 doxapram + keto-doxapram

269 24 h after ingestion of appr. 20 mL

270 active metabolite desethylamodiaquine ($t_{½}$: 1-10 days)

271 smokers: -0.0006 mg/L

272 0.01-0.1 mg/L for 9-hydroxyrisperidone

273 as active metabolite after administration of therapeutic doses of diazepam

274 active metabolite dimethadione (see Table)

275 HPLC-MS/MS (or FPIA) blood, in combination with ciclosporine micro-emulsion

276 n=439; median in µmol/L (interquartile range)

277 n=264; median in µmol/L (interquartile range)

278 in the presence of ethanol or during ethanol treatment ; $t_{½}$ longer in patients with a serum creatinine concentration ≥ 130 µmol/L

279 n=99; median in µmol/L (interquartile range)

280 3 dead infants aged ≤ 6 months with post mortem blood levels of pseudoephedrine ranging from 4.7 to 7.1 mg/L

281 daily dose 2-8 mg *per os* (p.o.)

282 treatment goal: cystine levels <1 nmol cystine/mg protein

283 according to other sources: < 0.005 mg/L; urine: < 0.05 mg/L; reference value for children in Germany: 0.015 mg/L urine. Case report: 0.13-0.16 mg/L (urine: 67.5 mg/L) on the first day after ingestion of appr. 54 g arsenic trioxide

284 potentially increased risk for visual adverse effects (> 3.5 mg/L) and abnormal liver function, respectively

285 trough plasma buprenorphine and norbuprenorphine concentrations in excess of 0.0007 mg/L were associated with minimal withdrawal symptoms in 11 heroin-dependent subjects

286 serum peak concentration of misoprostol acid (MPA) 574.8 ± 250.7, 287.6 ± 144.3, and 125.2 ± 53.8 pg/mL after sublingual, oral, and vaginal

application, respectively, of 0.4 mg misoprostol to 40 women undergoing termination of pregnancy

287 on the first day of hospital admission after unintentional ingestion of appr. 400-500 mg carbachol (corresponding urine concentration: 374 mg/L).

288 main (probably inactive) metabolite: morphine-3-glucuronide (M3G); active metabolite: morphine-6-glucuronide (M6G)

289 metabolite: nordoxylamine

290 active ß-hydroxy-metabolite

291 targeted range between AUC of 9-12 mg/L/h

292 as amprenavir; suggested minimum target trough concentration in patients with HIV-1 susceptible to the antiretroviral (ARV) drug (dose of 700 mg bid (twice daily))

293 suggested minimum target trough concentration in patients with HIV-1 susceptible to the antiretroviral (ARV) drug (dose of 300 mg qd (once daily))

294 suggested minimum target trough concentration in patients with HIV-1 susceptible to the antiretroviral (ARV) drug (dose of 400 mg bid (twice daily))

295 suggested minimum target trough concentration in patients with HIV-1 susceptible to the antiretroviral (ARV) drug (dose of 1,250 mg bid (twice daily))

296 suggested minimum target trough concentration in patients with HIV-1 susceptible to the antiretroviral (ARV) drug (dose of 1,000 mg bid (twice daily))

297 suggested minimum target trough concentration in patients with HIV-1 susceptible to the antiretroviral (ARV) drug (dose of 600 mg qd (once daily))

298 suggested minimum target trough concentration in patients with HIV-1 susceptible to the antiretroviral (ARV) drug (dose of 200 mg bid (twice daily))

299 suggested minimum target trough concentration for antiretroviral therapy-experienced patients who have resistant HIV-1 strains (dose of 500 mg bid (twice daily))

300 suggested minimum target trough concentration for antiretroviral therapy-experienced patients who have resistant HIV-1 strains

301 median (range) trough concentration from clinical trials (dose 600 mg bid (twice daily)); suggested threshold: > 0.55 mg/L

302 median (range) trough concentration from clinical trials

303 median (range) trough concentration from clinical trials

304 post-mortem heart blood level (death by hanging?)

305 active enantiomer of propoxyphene,; active metabolite norpropoxyphene

306 heart blood

307 C_{max} at steady state achieved after 2-3 weeks of once-daily inhalation of 18 µg tiotropium; t_{max} after inhalation of 18 µg: 5 min

308 steady state peak concentration following a 300 mg twice-daily or a 600 mg once-daily regimen

309 active metabolite cis-monohydroxyperhexiline ($t_{½}$: 10-29 h)

310 1-2 h after 50 mg

311 “laboratory alert level” according to AGNP Consensus Guidelines for therapeutic drug monitoring (TDM) in psychiatry: update 2011 i.e., drug concentrations above the recommended reference range, based on reports on intolerance or intoxications. In most cases, however, arbitrarily defined as plasma concentration that is 2-fold higher than the upper limit of the therapeutic reference range

312 active metabolite 6-hydroxybuspirone

313 C_{max} 1-2 h after 4 mg

314 at low dose therapy (2.5 mg); at maximum dose (25 mg): 0.001-0.004 mg/L

315 C_{max} 0.5-4 h after drug intake for 4 weeks

316 C_{max} after 2 h

317 60-90 min after intake of 1.2 mg/kg per day

318 4 h after 20 mg

319 $t_{½}$ with ritonavir 15-23 h

320 active metabolite 8-hydroxyloxapine ($t_{½}$: 20-60 h)

321 C_{max} after 2h-infusion of 6 mg: 0.328 mg/L, after infusion of 2 mg: 0.246 mg/L

322 mean C_{max} after 2h-infusion of 10 mg: 0.265 mg/L

323 mean C_{max} after 4h-infusion of 15 mg: appr. 0.25 mg/L

324 male; female: -0.07 mg/L, children: -0.06 mg/L (reference value for children in Germany: 0.035 mg/L (whole) blood)

325 shorter in case of hemodialysis or continuous venovenous hemodiafiltration (CVVHDF); in a, fatal, case with 4,400 mg methanol/L blood and in the presence of adequate ethanol level (1,000 mg/L or 1 ‰) appr. 3.5 h

326 after topical (dermal) application

327 prolonged in newborns (27.8 ± 21.3 h)

328 reference value for Germany: 0.014 mg/L urine

329 reference value for children in Germany: 0.0003 mg/L urine

330 reference value for children in Germany: 0.0045 mg/L urine

331 reference value in urine for children in Germany

332 reference value in whole blood in Germany

333 metabolite of 3,4 methylenedioxymeth(yl)amphetamine (MDMA)

334 $t_{½}$ (R)-MDE: 7.9 (6-11) h; $t_{½}$ (S)-MDE: 4.0 (3-6) h

335 40 h after oral ingestion of appr. 100 mg (0.03 mg/L 60 h after drug intake)

336 active metabolite phenytoin

337 prodrug; main active metabolites are morphine and morphine-6-glucuronide (M6G); main (probably) inactive metabolite = morphine-3-glucuronide (M3G)

338 in maintenance therapy e.g., for heavily dependent opioid addicts. 30 min after i.v- application of 150-300 mg diacetylmorphine: 0.1-0.24 mg/L morphine ($t_{½}$: 1-4 h), 2.6-5.9 mg/L morphine-3-glucuronide (M3G; $t_{½}$: (2-) 3-5 h), 0.5-1.0 mg/L morphine-6-glucuronide (M6G; $t_{½}$: (1-) 2-3 h), and 0.08-0.29 mg/L 6-monoacetylmorphine (6-MAM; $t_{½}$: appr. 2-5 min; N = 4); in another study 30 min after i.v- application of 260-300 mg diacetylmorphine: 0.39-0.75 mg/L morphine, 3.2-5.2 mg/L M3G, 0.5-0.7 mg/L M6G, and 0.08-0.19 mg/L 6-MAM (N = 4)

339 depending on tolerance and state/severity of pain

340 metabolites: norbuprenophine (active; $t_{½}$: 35.6 (1.1-66.8) h after i.v., 73.6 (13.4-143) h after buccal, and 83 (10-243) h after sublingual application), buprenorphine-glucuronide, and norbuprenorphine-glucuronide

341 active enantiomer of zopiclone

342 active enantiomer of methylphenidate

343 active enantiomer of citalopram

344 strongly dependent on pH of urine

345 symptomatic poisoning in adults is more likely with doses above 90 mg

346 on hospital day #2

347 19 h post-ingestion of appr. 4 g

348 5 h post-ingestion; all patients with a plasma paraquat level above 3.44 mg/L died

349 prolonged in (paraquat-induced) renal failure to appr. 80-120 (-150) h

350 active enantiomer of moramide

351 active enantiomer of fenfluramine

352 active enantiomer of methadone

353 after a bolus dose of 0.25 mg/kg body weight (N=10): 2.3 mg/L at 3 min, 0.84 mg/L at 30 min, 0.61 mg/L at 1 h, and 0.44 mg/L at 2 h

354 active metabolite oxypurinol

355 11 h after ingestion

356 $t_{½}$ in poor metabolisers of cytochrome P450 (CYP) 2D6 is appr. 21 h

357 metabolite of cocaine

358 dependent on pH of urine

359 sum of dibenzepine and desmethyldibenzepine

360 active metabolite of trimethadione

361 metabolite: acetone

362 in non-users of opioids/opiates

363 active metabolite norlorcainide ($t_{½}$: 28-32 h), therapeutic plasma concentration: 0.1-1.5 mg/L

364 metabolite of azathioprin

365 (cis-) isomer of clopenthixol

366 active metabolites norsibutramine ($t_{½}$: 12-22 h) and dinorsibutramine ($t_{½}$: 14-23 h)

367 with silver sulphadiazine ointment for burns: 0.06-0.6 mg/L (non-toxic)

368 active metabolite fexofenadine

369 as metabolite of chloralhydrate

370 peak plasma concentration (C_{max}) after 1 h chewing khat leaves that supplied 32 mg cathine

371 higher for poor metabolisers (PM) of cytochrome P450 (CYP) 2C9

372 enantiomer of loratadine

373 0.001-0.0035 mg/L for the active metabolite 3-hydroxydesloratadine ; $t_{½}$: 17-27 h)

374 enantiomer of ketoprofen

375 after a single oral dose of 2 mg

376 average of 12 victims

377 serum morphine (active metabolite) levels were appr. 0.013 (extensive metabolisers, EM) and 0.003 (poor metabolisers, PM)

378 enantiomer of cetiricine

379 endogenous: -0.00001-0.00009 mg/L

380 active metabolite of psilocybin

381 during anaesthesia

382 measured 14 h post-ingestion

List of abbreviations:
appr., approximately; $t_{½}$, in general, terminal elimination half-life (if not stated otherwise); C_{min}, minimum (trough) plasma/serum concentration (usually at steady state); C_{max} , maximum (peak) plasma/serum concentration; t_{max}, time to peak concentration (C_{max}); SD, standard deviation; mol wt, molecular weight; AUC, area under the (plasma concentration-time) curve

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