

SUPPORTING INFORMATION

A Provisional Biopharmaceutical Classification of the Top 200 Oral Drug Products in the United States, Great Britain, Spain, and Japan

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[#]The opinions expressed in this report are those of the author and do not necessarily represent the views or policies of the Food and Drug Administration.

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Table S11. Oral Immediate-Release drugs on the US List^a

drug	solubility classification	CLogP-based	Log P-based	permeability classification	therapeutic category	BCS class	
						CLogP-based	Log P-based
abacavir sulfate	high	low	low	low	antiviral	3	3
acetaminophen	low	low	low	low	analgesic; antipyretic	4	4
albuterol sulfate	high	low	low	low	bronchodilator	3	3
alendronate sodium	high	low	high	high	bone resorption inhibitor	3	
amlodipine besylate	high	high	low	low	antihypertensive	1	3
amoxicillin	high	low	low	low	antianginal; antibacterial	3	3
amphetamine (mixed salt)	high	low	low	low	cns stimulant; anorexic	3	3
aripiprazole	high	high	high	high	antipsychotic		
atomoxetine hydrochloride	low	high	high	high	in treatment of attention-deficit/hyperactivity disorder	2	
atorvastatin calcium	low	low	high	high	antihyperlipoproteinemic		
azithromycin hydrate	high	high	high	high	antibacterial	2	
benazepril hydrochloride	low	high	high	high	antihypertensive	1	1
bicalutamide	high	high	high	high	antiandrogen; antineoplastic	2	2
bupropion hydrochloride	high	high	high	high	antidepressant	1	1
carvedilol	low	low	high	high	antihypertensive	2	2
cefdinir	low	low	low	low	antibacterial	4	4
cefprozil	low	low	low	low	antibacterial		
celecoxib	low	high	high	high	anti-inflammatory	2	2
cetirizine hydrochloride	high	high	high	high	antihistaminic	1	1
ciprofloxacin hydrochloride	high	low	low	low	antibacterial	3	3
citalopram hydrobromide	high	high	high	high	antidepressant	1	1
clarithromycin	low	high	low	high	antibacterial		
clonidine hydrochloride	high	high	low	high	antihypertensive	3	1
clopigogrel bisulfate	low	high	high	high	antithrombotic	2	2
cyclosporine	low	low	low	low	immunosuppressant		

meloxicam	low	high	low	anti-inflammatory	4
metaxalone	low	high	high	muscle relaxant	2
metformin hydrochloride	high	low	low	antidiabetic	2
methylphenidate hydrochloride	low	high	high	cns stimulant	3
metoprolol tartrate	high	high	high	antihypertensive; antianginal	2
mirtazapine	high	high	high	antidepressant	1
modafinil	low	low	low	cns stimulant	1
montelukast sodium	high	high	high	antiasthmatic	1
moxifloxacin hydrochloride	low	low	low	antibacterial	4
mycophenolate mofetil	low	high	low	immunosuppressant	2
nelfinavir mesylate	low	high	high	antiviral	2
niacin	high	high	high	antihyperlipoproteinemic	3
norgestimate	high	high	low	contraceptive	3
olanzapine	low	high	low	antipsychotic	2
ondansetron hydrochloride	high	high	low	antiemetic	1
oxcarbazepine	low	low	low	anticonvulsant	4
oxybutynin hydrochloride	high	high	high	in treatment of urinary incontinence	
oxycodone hydrochloride	low	high	low	analgesic	4
paroxetine hydrochloride	high	high	high	antidepressant	1
piglatinzone hydrochloride	low	high	high	antidiabetic	1
pravastatin sodium	high	high	low	antihyperlipoproteinemic	2
propranolol hydrochloride	high	high	high	antihypertensive; antianginal	1
pseudoephedrine hydrochloride	high	high	low	decongestant	1
quetiapine fumarate	low	high	high	antipsychotic	3
quinapril hydrochloride	high	high	high	antihypertensive	2
raloxifene hydrochloride	low	high	high	antosteoporotic	1
ramipril	high	high	high	antihypertensive	2
ranitidine hydrochloride	high	high	low	antulcerative	1
ribavirin	high	high	low	antiviral	3
risendronate sodium	low	low	high	bone resorption inhibitor	3
risperidone	low	high	high	antipsychotic	2
ritonavir	low	high	high	antiviral	2
rizatriptan benzoate	high	high	low	antimigraine	3

rofecoxib	2	high	high	anti-inflammatory
rosiglitazone maleate	1	high	high	antidiabetic
sertraline hydrochloride	1	high	high	antidepressant
sildenafil citrate	1	high	high	in treatment of male erectile dysfunction
simvastatin	1	low	high	antihyperlipidemic
stavudine	2	high	high	antiviral
sumatriptan succinate	3	low	low	antimigraine
tacrolimus	3	low	immunosuppressant	
tenofovir disoproxil fumarate	1	high	antiviral	
terbinafine hydrochloride	1	high	antifungal	
tolterodine tartrate	1	high	in treatment of urinary incontinence	
topiramate	3	low	anticonvulsant	
tramadol hydrochloride	3	high	analgesic	
valacyclovir hydrochloride	1	low	antiviral	
valdecoxib	3	high	in treatment of osteoarthritis	
valsartan	1	high	antihypertensive	
venlafaxine hydrochloride	2	high	antidepressant	
warfarin sodium	1	high	anticoagulant	
zidovudine	2	low	antiviral	
ziprasidone hydrochloride	3	high	antipsychotic	
zolmitriptan	1	low	antimigraine	
zolpidem tartrate	1	high	sedative	

^asolubility, dose, and partition coefficient data available at website: <http://www.tsrlinc.com/search.cfm>

Table S12. Oral Immediate-Release drugs on the GB List^a

drug	solubility classification	permeability classification	therapeutic category	BCS class	
				CLogP-based	Log P-based
abacavir sulfate	high	low	antiviral	3	3
acarbose	high	low	antidiabetic	3	3
acetaminophen	low	low	analgesic; antipyretic	4	4
acetylsalicylic acid	low	low	analgesic; antipyretic; anti-inflammatory	4	4
acyclovir	low	low	antiviral	4	4
alendronate sodium	high	low	bone resorption inhibitor	3	
alprazolam	high	high	anxiolytic	1	1
amisulpride	high	high	antipsychotic		
amlodipine besylate	high	high	antianginal; antihypertensive	1	3
amoxicillin	high	low	antibacterial	3	3
anastrozole	high	low	antineoplastic	3	1
atorvastatin calcium	low	high	antihyperlipoproteinemic	2	2
azithromycin hydrate	low	high	antibacterial		
benserazide hydrochloride	high	low	antiparkinsonian	3	3
bicalutamide	low	high	antiandrogen; antineoplastic	2	2
bisoprolol fumarate	high	high	antihypertensive	1	1
cabergoline	low	high	prolactin inhibitor; antiparkinsonian	2	2
candesartan cilexetil	low	high	antihypertensive	2	2
carbamazepine	low	high	anticonvulsant	2	2
carvedilol	low	high	antihypertensive	2	2
cefuroxime axetil	low	low	antibacterial	4	4
celecoxib	high	high	anti-inflammatory	2	2
cetirizine hydrochloride	high	high	antihistaminic	1	1
ciprofloxacin hydrochloride	high	low	antibacterial	3	3
citalopram hydrobromide	high	high	antidepressant	1	1
clarithromycin	low	high	antibacterial		
clopidogrel bisulfate	low	high	antithrombotic	2	2
clozapine	low	high	antipsychotic	2	2

venlafaxine hydrochloride	high	high	high	1
zidovudine	high	low	low	3
zolmitriptan	high	low	high	3
zolpidem tartrate	high	high	high	1

^asolubility, dose, and partition coefficient data available at website: <http://www.tsrlinc.com/search.cfm>

Table S13. Oral Immediate-Release drugs on the ES List^a

drug	solubility classification	CLogP-based	Log P-based	permeability classification	therapeutic category	BCS class	
						CLogP-based	Log P-based
abacavir sulfate	high	low	low	low	antiviral	3	3
acarbose	high	low	low	low	antidiabetic	3	3
acetaminophen	low	low	low	analgesic; antipyretic	4	4	
acetylsalicylic acid	high	low	low	analgesic; antipyretic; anti-inflammatory	3	3	
acyclovir	low	low	low	antiviral	4	4	
alendronate sodium	high	high	high	bone resorption inhibitor	3	1	
alprazolam	high	high	high	anxiolytic	1	1	
amisulpride	high	high	high	antipsychotic	3	3	
amlodipine besylate	high	high	low	antianginal; antihypertensive	1	3	
amoxicillin	high	low	low	antibacterial	3	3	
anastrozole	high	low	high	antineoplastic	3	1	
atorvastatin calcium	low	low	high	antihyperlipoproteinemic	2	2	
azithromycin hydrate	low	low	high	antibacterial	3	3	
benserazide hydrochloride	high	low	low	antiparkinsonian	3	3	
bicalutamide	low	high	high	antiandrogen; antineoplastic	2	2	
bisoprolol fumarate	high	high	high	antihypertensive	1	1	
cabergoline	high	high	high	prolactin inhibitor; antiparkinsonian	1	1	
candesartan cilexetil	low	high	high	antihypertensive	2	2	
carbamazepine	low	high	high	anticonvulsant	2	2	
carvedilol	low	high	high	antihypertensive	2	2	
cefuroxime axetil	low	low	low	antibacterial	4	4	
celecoxib	high	high	high	anti-inflammatory	2	2	
cetirizine hydrochloride	high	high	high	antihistaminic	1	1	
ciprofloxacin hydrochloride	high	low	low	antibacterial	3	3	

citalopram hydrobromide	high	high	high	high	1
clarithromycin	low	high	high	antidepressant	
clopidogrel bisulfate	low	high	high	antibacterial	
clozapine	low	high	high	antithrombotic	
codeine phosphate	high	low	low	antipsychotic	
cyclosporine	low	low	high	analgesic	
cypertropon acetate	low	high	high	immunosuppressant	
desloratadine	high	high	high	antidiuretic	1
desogestrel	high	high	high	antihistaminic	2
diltiazem hydrochloride	high	high	high	progestogen	2
donepezil hydrochloride	high	high	high	antitussive	2
doxazosin mesylate	high	high	high	antidiarrheal; antihypertensive	2
efavirenz	low	low	high	nootropic	2
enalapril maleate	high	high	high	antihypertensive	2
ethynodiol	high	high	high	antihypertensive	2
feno-fibrate	low	high	high	antiviral	2
finasteride	high	high	high	antihypertensive	2
fluconazole	low	low	high	antihyperlipoproteinemic	2
fluoxetine hydrochloride	high	high	high	antihyperlipoproteinemic	2
fluvastatin sodium	high	high	high	antihyperlipoproteinemic	2
gabapentin	high	low	low	anticonvulsant	2
gliclazide	low	low	high	antidiabetic	2
glimepiride	low	low	high	antidiabetic	2
hydrochlorothiazide	low	low	low	diuretic	2
imatinib mesylate	low	high	high	antineoplastic	2
indapamide	high	high	high	antihypertensive; diuretic	2
irbesartan	low	low	high	antihypertensive	2
itraconazole	high	high	high	antifungal	2
lamivudine	low	high	low	antifungal	2
lamotrigine	low	high	high	anticonvulsant	2
letrozole	high	low	high	antineoplastic	2
levodopa	high	low	low	antiparkinsonian	1
levofloxacin	high	low	low	antibacterial	3
			low	antibacterial	3

lisinopril	high	low	low	low	3
lopinavir	low	high	high	high	2
loratadine	low	high	high	high	2
lorazepam	high	high	high	high	1
losartan potassium	high	high	high	high	3
metformin hydrochloride	high	high	high	high	1
metoprolol tartrate	high	high	high	high	1
mirtazapine	high	high	high	high	3
montelukast sodium	high	high	high	high	1
mycophenolate mofetil	low	low	high	high	1
nevirapine	low	low	high	high	2
nifedipine	low	low	high	high	2
olanzapine	low	low	high	high	2
ondansetron hydrochloride	high	low	high	high	3
orlistat	high	high	high	high	2
paroxetine hydrochloride	high	high	high	high	2
perindopril erbumine	high	high	high	high	1
pravastatin sodium	high	high	low	low	1
quetiapine fumarate	low	low	high	high	3
raloxifene hydrochloride	low	high	high	high	3
ramipril	high	high	high	high	3
ranitidine hydrochloride	high	high	low	low	3
ribavirin	high	low	low	low	3
risedronate sodium	high	low	high	high	2
risperidone	low	low	high	high	2
ritonavir	low	high	high	high	2
rivastigmine tartrate	high	high	high	high	1
rofecoxib	low	high	high	high	2
sertraline hydrochloride	high	high	high	high	1
sildenafil citrate	high	high	high	high	1
simvastatin	low	low	high	high	2
stavudine	high	high	low	low	3
sumatriptan succinate	high	high	low	low	3

tacrolimus	low	high	high	high	immunosuppressant
telmisartan	low	low	high	high	antihypertensive
tenofovir disoproxil fumarate	high	high	high	high	antiviral
terbinafine hydrochloride	high	high	high	high	antifungal
tibolone	high	high	high	high	in treatment of menopausal syndrome in treatment of urinary incontinence
tolterodine tartrate	high	high	high	low	anticonvulsant
topiramate	high	low	high	high	analgesic
tramadol hydrochloride	high	high	low	low	antianginal
trimetazidine dihydrochloride	high	high	low	low	antiviral
valacyclovir hydrochloride	high	low	low	low	anticonvulsant; antimanic; antimigraine
valproate sodium	low	high	high	high	antimigraine
valsartan	low	high	high	high	antihypertensive
venlafaxine hydrochloride	high	high	high	high	antidepressant
zidovudine	high	low	low	low	antiviral
zolmitriptan	high	low	low	high	antimigraine
zolpidem tartrate	high	high	high	high	sedative

^asolubility, dose, and partition coefficient data available at website: <http://www.tsrlinc.com/search.cfm>

Table S14. Oral Immediate-Release drugs on the JP List^a

drug	solubility classification				therapeutic category	BCS class	
	JP 150 mL	FDA 250 mL	CLogP- based	Log P-based		CLogP- based	Log P- based
acarbose	high	high	low	low	antidiabetic	3	3
acetaminophen	low	low	low	low	analgesic; antipyretic	4	4
acetylsalicylic acid	high	high	low	low	analgesic; antipyretic; anti-inflammatory	3	3
acyclovir	low	low	low	low	antiviral	4	4
alendronate sodium hydrate	high	high	low	high	bone resorption inhibitor	3	
alfacalcidol	high	high	high	high	vitamin d source	1	1
allopurinol	low	high	low	low	antiurolithic	4	4
ambroxol hydrochloride	high	high	high	high	expectorant	1	1
amlodipine besylate	high	high	high	high	antianginal; antihypertensive	1	1
atenolol	high	high	low	low	antihypertensive, antianginal, antiarrhythmic (class ii)	3	3
atorvastatin calcium	low	low	high	high	antihyperlipoproteinemic	2	2
aztreonam hydrate	low	low	low	high	antibacterial		
azulene sulfonate sodium	high	high	high	high	antacid	1	1
benidipine hydrochloride	low	low	high	high	antihypertensive	2	
beraprost sodium	high	high	high	high	antithrombotic; vasodilator	1	1
bicalutamide	low	low	high	high	antiandrogen; antineoplastic	2	2
bisoprolol fumarate	high	high	high	high	antihypertensive	1	1
brotizolam	high	high	high	high	sedative	1	1
cabergoline	high	high	high	high	prolactin inhibitor; antiparkinsonian	1	1
canostat mesylate	high	high	high	low	protease inhibitor	1	3
candesartan cilexetil	low	low	high	high	antihypertensive	2	2
carvedilol	low	low	high	high	antihypertensive	2	2
cefcapene pivoxil hydrochloride	high	high	low	high	antibacterial	3	1
cefdinir	low	low	low	low	antibacterial	4	4
cefditoren pivoxil	low	low	high	high	antibacterial	2	2

cefotiam hexetil hydrochloride	low	high	low	low	low	low	low	low	4
cetirizine hydrochloride	high	1							
cilostazol	low	low	low	low	high	high	high	high	2
clarithromycin	low	low	low	high	high	high	high	high	2
cyclosporin a	low	low	low	high	high	high	high	high	1
diclofenac sodium	low	low	low	high	high	high	high	high	1
donepezil hydrochloride	high	1							
doxazosin mesylate	high	1							
doxifluridine	high	high	high	low	low	low	low	low	3
ebastine	low	low	low	high	high	high	high	high	2
enalapril maleate	high	high	high	low	high	high	high	high	1
epalrestat	low	low	low	high	high	high	high	high	2
eperisone hydrochloride	high	1							
epinastine hydrochloride	high	high	high	low	high	high	high	high	1
ethyl icosapentate	low	low	high	high	high	high	high	high	2
etizolam	high	1							
famotidine	low	high	high	low	high	low	low	low	4
fexofenadine hydrochloride	high	high	high	low	high	high	high	high	1
fluconazole	low	low	low	high	high	high	high	high	1
flurbiprofen	high	2							
fluvastatin sodium	high	1							
fluvoxamine maleate	high	1							
fursultiamine	high	high	high	low	high	high	high	high	3
gefitinib	low	low	high	low	high	high	high	high	2
glimepiride	low	low	high	high	high	high	high	high	2
granisetron hydrochloride	high	high	high	low	high	high	high	high	1
imatintib mesylate	low	low	high	high	high	high	high	high	3
imidapril hydrochloride	high	high	high	low	high	high	high	high	2
itraconazole	low	low	low	high	high	high	high	high	2
ketoprofen	low	low	high	high	high	high	high	high	2
ketotifen fumarate	high	1							
L-carbocysteine	low	4							
levofloxacin	high	3							

limaprost alfadex	high	high	antianginal	1
loratadine	low	high	antihistaminic	2
losartan potassium	high	high	antihypertensive	1
loxoprofen sodium	high	high	antiinflammatory	1
manidipine hydrochloride	low	low	antihypertensive	2
mecobalamin	high	high	vitamin	1
meloxicam	low	low	anti-inflammatory	4
menatetrenone	low	low	vitamin (prothrombogenic)	2
mesalazine	low	high	anti-inflammatory	2
methylmethioninesulfonium chloride	high	high	antiulcerative	4
mexiletine hydrochloride	high	high	antiarrhythmic	1
montelukast sodium	high	high	antiasthmatic	1
mosapride citrate	low	low	gastrokinetic	2
nicardipine hydrochloride	high	high	antianginal; antihypertensive	2
nicergoline	low	low	vasodilator	3
nicorandil	high	high	antianginal	3
nifedipine	low	low	antianginal; antihypertensive	2
nilvadipine	low	low	antihypertensive; antianginal	2
nizatidine	high	high	antiulcerative	3
olanzapine	low	low	antipsychotic	2
olopatadine hydrochloride	high	high	antiallergic; antihistaminic	3
oseltamivir phosphate	high	high	antiviral	1
paroxetine hydrochloride hydrate	high	high	antidepressant	3
pergolide mesylate	high	high	antiparkinsonian	1
perindopril erbumine	high	high	antihypertensive	3
pilsicainide hydrochloride	high	high	antiarrhythmic	1
pioglitazone hydrochloride	low	low	antidiabetic	2
pranlukast hydrate	low	low	antiasthmatic	2
pravastatin sodium	high	high	antihyperlipoproteinemic	1
procaterol hydrochloride	high	high	bronchodilator	3
propiverine hydrochloride	high	high	in treatment of urinary incontinence	1
quetiapine fumarate	high	high	antipsychotic	1

ranitidine hydrochloride	high	low	high	high	high	antiulcerative
rebamipide	low	high	low	low	2	antiulcerative
risendronate sodium	high	high	low	high	3	bone resorption inhibitor
risperidone	low	low	high	high	2	antipsychotic
sarpogrelate hydrochloride	high	high	high	high	1	antithrombotic
simvastatin	low	low	high	high	2	antihyperlipidemic
sulfamichillin tosilate	low	low	high	low	2	antibacterial
tacrolimus hydrate	low	low	high	high	3	immunosuppressant
talidomide hydrate	high	high	low	low	in treatment of spinocerebellar degeneration	
tamoxifen citrate	low	low	high	low	2	antiestrogen; antineoplastic
tegafur	high	high	high	high	3	antineoplastic
temocapril hydrochloride	high	high	low	low	3	antihypertensive
teprene	low	low	high	high	1	antiulcerative
terbinafine hydrochloride	high	high	high	high	2	antifungal
ticlopidine hydrochloride	low	low	high	high	2	antithrombotic
tocopherol nicotinate	low	low	high	high	2	antihyperlipidemic
tulobuterol hydrochloride	high	high	low	high	1	bronchodilator
ursodeoxycholic acid	low	low	high	high	2	anticholelithogenic
valacyclovir hydrochloride	high	high	low	low	3	antiviral
valproate sodium	low	low	high	high	2	anticonvulsant; antimanic; antimigraine
valsartan	high	high	low	low	2	antihypertensive
voglibose	high	high	high	high	2	antidiabetic
zolpidem tartrate	high	high	high	high	1	sedative

^asolubility, dose, and partition coefficient data available at website: <http://www.tsrlinc.com/search.cfm>

Table S15. Revised BCS Classification of Oral drugs in the WHO Essential Medicines Core list.^{a,b,c,d}

Drug	Maximum dose strength, (mg)	Solubility definition	Solubility, (mg/ml)	Dose Number, (Do)	CLogP	Log P	pK _a (s)	Therapeutic Class		BCS Class
								Log P- based	CLogP- based	
abacavir sulfate	300	vss	77	0.016	0.58	0.22	5.01	antiviral	3	3
acetazolamide	250	ss, 300	0.1	10	-1.13	0.14	7.2	antiglaucoma; diuretic	4	4
acetylsalicylic acid	500	sps	3.33	0.601	1.02	1.18	3.5	nsains, antithrombolytic	3	3
acyclovir	200	pi	10	0.08	-2.42	-1.59		antiviral (antiherpes)	3	3
albendazole	400	pi	0.01	160	3.46	2.55		anthelmintic (cestodes)	2	2
alloparinol	100		0.48	0.833	0.63	10.2		antiurolithic	3	3
aluminum hydroxide	500	pi	0.01	200				gastrointestinal agent		
amiloride hydrochloride	5	ss	1	0.02	-0.55	-0.73	8.7	diuretic	3	3
amitriptyline hydrochloride	25	fs	100	0.001	4.85	4.42	9.4	anxiolytic; antidepressant	1	1
amoxicillin	500	ss	4	0.50	-1.87	-0.58		antibacterial	3	3
artemether	20				2.92	3.51		antimalarial		
ascorbic acid	50				333.33	0.0006	-1.76	-3.36	vitamin	3
atenolol	100	sps	26.5	0.015	-0.11	0.50	9.6	antihypertensive; antianginal	3	3
atropine sulfate	1	vs, 0.5	2000	0.000002	1.30	1.53	4.35	antispasmodic	3	3
azathioprine	50	pi	0.01	20	0.51		8.2	antirheumatic	4	
benznidazole	100		0.4	1.0	0.90			antiprotozoal (trypanosoma)	3	
biperiden hydrochloride	2	ss	1	0.008	4.42	3.56		antiparkinsonian	1	1
captopril	25	fs	100	0.001	0.89	0.24	3.7, 9.8	antihypertensive	3	3
carbamazepine	200	pi	0.01	80	1.98	2.93	7.0	anticonvulsant; antiepileptic	2	2
chloramphenicol	250	ss	2.5	0.40	1.28	-0.23		antibacterial	3	3
chloroquine phosphate	150	fs	100	0.006	5.06	3.73		antimalarial; antiamebic	1	1
chlorpheniramine maleate	4	fs	160	0.0001	3.15	3.62		antihistaminic	1	1
chlorpromazine hydrochloride	100	vs	1000	0.000	5.80	4.24		antiemetic; antipsychotic	1	1
cimetidine	200	ss	1	0.80	0.35	0.79	6.8	antilulcerative	3	3
ciprofloxacin hydrochloride	250	sps	10	0.1	-1.15	1.32		antibacterial	3	3
clofazimine	100	pi	0.01	40	7.50	5.39		antibacterial (leprotostatic)	2	2
clomiphene citrate	50	ss	1	0.20	7.15	6.7		gonad-stimulating principle	1	1
clomipramine hydrochloride	25	fs	100	0.001				antidepressional agent		

cloxacillin sodium	1000	fs	100	0.04	2.52	2.06	1	antibacterial
codeine phosphate	30	fs	100	0.0012	0.98	1.45	3	narcotic analgesic ; antitussive
colchicine	0.5	s	33	0.0001	1.20	0.05	3	gout suppressant
cyclophosphamide	25	s	40	0.0025	0.93	1.32	3	antineoplastic; dmard
dapsone	100	vss	0.1	4	0.89	1.79	4	antibacterial (leprostatic)
dexamethasone	0.5	vss	0.1	0.02	0.72	2.98	1	anti-inflammatory
diazepam	5	ss	1.0	0.02	3.17	3.4	1	anxiolytic; muscle relaxant
didanosine	200	vs	27.3	0.03	-1.92	-1.1	3	antiviral
diethylcarbamazine citrate	100	vs	1000	0.0004	1.62	0.09	3	anthelmintic (nematodes)
digoxin	0.25	pi	0.01	0.1	1.27	1.95	1	cardiotonic (antiarrhythmic)
diloxanide furate	500	vss	0.1	20	1.77	1.96	2	antidiabetic
dl-methionine	250	s	33	0.030	-1.73	-0.56	2	specific antidote
doxycycline	100	s	33	0.0121	-0.60	-3.66	3	antibacterial; antimarial
efavirenz	200	pi	0.01	80	4.95	3.68	2	antiviral
ergocalciferol	1.25	pi	0.01	0.5	9.91	7.04	1	vitamin
ergometrine maleate	0.2	ss	10	0.00008	1.23	0.35	3	oxytocic
ergotamine tartrate	1	vss, 3200	0.3	0.0133	4.66	2.24	1	antimigraine
erythromycin ethyl succinate	250	vss, 1000	1	1.0	1.47	8.8	1	antibacterial
ethambutol hydrochloride	400	fs	100	0.016	0.12	0.06	3	antibacterial (tuberculostatic)
ethinyl estradiol	0.05	pi	0.01	0.02	3.86	4.0	1	estrogen (contraceptive)
ethoxsuximide	250	fs	100	0.01	0.40	0.88	3	anticonvulsant
ferrous sulfate	60	fs, 1.5	667	0.0004			3	hematopoietic (antianaemia)
fluconazole	50	ss	1	0.2	0.53	0.99	3	antifungal
folic acid	5	vss	0.1	0.2	-2.31	-0.52	3	vitamin (hematopoietic)
furosemide	40	pi	0.01	16	1.9	0.74	4	diuretic; antihypertensive
glibenclamide	5	pi	0.01	2	4.24	3.53	2	antidiabetic
glyceryl trinitrate	0.5		1.25	0.0016	-5.77		2	antianginal
griseofulvin	250	vss	0.1	10	1.77	0.68	4	antifungal
haloperidol	5	pi	0.01	2	3.85	3.49	2	antipsychotic
hydralazine hydrochloride	50	s, 25	40	0.005	1.02	0.73	3	antihypertensive
hydrochlorothiazide	50	ss	1	0.2	-0.36	-0.15	3	diuretic; antihypertensive
ibuprofen	400	pi	0.01	160	3.68	3.14	2	nsain, analgesic; antipyretic
indinavir sulfate	400		0.015	106.67	3.68	2.49	2	antiviral
iopanoic acid	500	pi	0.01	200	4.70	6.21	2	contrast medium
isoniazid	300	fs, 8	125	0.01	-0.67	-0.60	3	antibacterial (tuberculostatic)
isosorbide dinitrate	5	sps					3	antianginal

ivermectin	6	0.004	6	0.0086	-1.46	0.06	anthelmintic (onchocerca)	3	3
laniuvidine	150	fs	70	0.006	1.84	2.79	antiviral	1	1
levamisole hydrochloride	150	ss	100	0.006	-2.82		anthelmintic (nematodes)	1	3
levodopa	250	pi	1	1.0			antiparkinsonian		
levonorgestrel	0.75	vss	0.01	0.3	3.31	3.06	progestogen; contraceptive	1	1
levothyroxine sodium	0.1	sps	0.15	0.003	3.51	7.36	thyroid hormone	1	1
lithium carbonate	300	sps	10	0.12			antimanic		
lopinavir (with ritonavir)	133.3	pi	0.01	53.3	6.10	4.56	antiviral	2	2
mebendazole (chewable)	500	ss	1	1.00	3.08	2.50	anthelmintic (nematodes)	2	2
mefloquine hydrochloride	250	fs	100	0.02	3.67	4.12	antimalarial	1	1
methformin hydrochloride	500	pi	0.01	1.0	-1.63	0.15	antidiabetic	3	3
methotrexate	2.5	sps	10	0.1	-0.53	0.94	antineoplastic; antirheumatic	3	3
methylldopa	250	vs	1000	0.00004	-2.73	0.39	antihypertensive	3	3
metoclopramide hydrochloride	10	sps	10	0.2	2.23	1.48	antiemetic	3	1
metronidazole	500	pi	0.01	-0.46			antiprotozoal; antibacterial	3	3
morphine sulfate	10	vss	0.1	20	1.34	1.63	analgesic (narcotic)	4	4
naldixic acid	250	pi	0.01	100.00	5.84	4.62	antibacterial	2	2
nefifinavir mesylate	15	vs	1000	0.00006	-2.81	-1.2	cholinergic; muscle relaxant	3	3
neostigmine bromide	200		0.1	8	2.42	2.8	antiviral	2	2
nevirapine	500	pi	0.01	200	2.05		anthelmintic (cestodes)	2	2
niclosamide (chewable)	50	pi	100	0.002	3.38		vitamin (enzyme cofactor)	3	3
nicotinamide	10	pi	0.01	4	-0.21	-0.35	antianginal; antihypertensive	2	2
nifedipine	250	s	33	0.03	3.41		antiprotozoal (trypanosoma)	3	3
nifurtimox	100	vss	0.19	2.11	2.31		antibacterial	4	4
nitrofurantoin	1	pi	0.01	0.40	-0.47		oral contraceptive	1	1
norethindrone	100	pi	4	0.1	2.78	2.64	antifungal	3	3
nystatin	100	vss	0.19	0.03	-3.20		analgesic; antipyretic	4	4
paracetamol	500	pi	0.1	20	0.49	0.89	dmard; antidote	3	3
penicillamine	250	fs	100	0.01	-1.73	-0.39	anticonvulsant; hypnotic	3	1
penicillin v potassium	500		33	0.06	1.94	0.48	anticonvulsant; antiepileptic	2	2
phenobarbital	100	vss, 1000	1	0.4	1.37	1.52	anticonvulsant; antiepileptic	2	2
phenytoin (chewable)	50	pi	0.01	20	0.09	2.14	anthelmintic (schistosoma)	2	2
phenytoin sodium	100	pi	0.01	40	2.09	2.14	glucocorticoid; antiallergic	1	1
praziquantel	600	vss	0.4	6	3.36	2.02	antimalarial	3	1
prednisolone	5	vss	0.1	0.2	3.50	2.51			
primaquine phosphate	15	s, 15	66.7	0.0009	2.60	1.47			

proguanil hydrochloride	100	ss	1	0.40	2.53	3.17	9.1	antimalarial	1	1
promethazine hydrochloride	25	vs	1000	0.0001	4.90	3.90	antihistaminic; antiemetic	1	1	1
propranolol hydrochloride	40	s	33	0.00	2.75	2.65	migrane prophylaxis	1	1	1
propylthiouracil	50	ss	1	0.20	-0.03	0.57	antihyperthyroid	3	3	3
pyrantel embonate	250	pi	0.01	100	3.03	2.50	anthelminthic (nematodes)	2	2	2
pyrazinamide	400	ss	15	0.107	-0.68	-1.41	antibacterial (tuberculostatic)	3	3	3
pyridostigmine bromide	60	fs	100	0.002	-4.51		cholinergic; muscle relaxant			3
pyridoxine hydrochloride	25	fs	222.2	0.0005	-0.80	-0.49	vitamin (enzyme cofactor)	3	3	3
pyrimethamine	25	pi	0.01	10	3.00	1.5	antiprotozoal (toxoplasma)	4	2	2
quinine sulfate	300	ss	1.2	1	2.79	2.48	antimalarial; muscle relaxant	1	1	1
reserpine	0.25	pi	0.01	0.1	3.72	2.69	antihypertensive	1	1	1
retinol palmitate	110	pi	0.01	44	6.40	4.69	vitamin (antixerophthalmic)	2	2	2
riboflavin	5			0.0667	0.3	-0.73	0.47	vitamin	3	3
rifampicin	300	vss	0.1	12			antibacterial (tuberculostatic)			
ritonavir	100	pi	0.01	40	4.94	5.98	antiviral	2	2	2
salbutamol sulfate	4		33	0.0005	0.06	0.97	bronchodilator; tocolytic	3	3	3
saquinavir mesylate	200		2.22	0.36	4.73	2.73	antiviral	1	1	1
senna (sennoside a&b)	7.5	s, 35	28.6	0.001			cathartic			
sodium iodide	60			2000	0.00012		iodine deficiency			
spironolactone	25	pi	0.01	10	2.25	2.90	diuretic	2	2	2
stavudine	40		83	0.002	-0.73	-0.47	antiviral	3	3	3
sulfadiazine	500	pi, 13000	0.08	25	0.10	0.21	antibacterial	4	4	4
sulfamethoxazole	400	pi	0.01	160	0.56	0.86	antibacterial	4	4	4
sulfasalazine	500	pi	0.01	200	3.88	3.42	gi anti-inflammatory; dmards	2	2	2
theophylline	300	s	8.33	0.144	-0.03	-1.03	8.77, 13.5, 11.5	bronchodilator	3	3
thiamine	50		1000	0.0002	-5.04		vitamin			
tricabendazole	250				6.44	5.44	anthelminthic (fasciola)			
trimethoprim	200	vss	0.4	2	0.98	1.43	antibacterial	4	4	4
valproic acid	500	ss	1.3	1.54	2.76	2.42	anticonvulsant; antimanic	2	2	2
verapamil hydrochloride	80	s	83	0.004	4.47	5.69	antianginal; antiarrhythmic	1	1	1
warfarin sodium	5	vs	1000	0.00002	2.90	2.97	anticoagulant	1	1	1
zidovudine	300		20.1	0.06	0.04		antiviral			3

^aDrugs in red font: solubility values revised
^bDrugs in blue font: additional drugs
^cDrugs in green font: CLogP values
^dsolubility, dose, and partition coefficient data available at website: <http://www.tsrlinc.com/search.cfm>

Table SI6. BCS (CLogP metoprolol) vs BDDCS

Class 1 in both	Class 2 in both	Class 3 in both	3 in BCS / 1 in BDDCS	2 in BCS / 1 in BDDCS
33	48	31	24	2
Amitriptyline	Albendazole	Acyclovir	Abacavir	Ketoprofen
Buspirone	Amiodarone	Amiloride	Acetaminophen	Nifedipine
Chlorpheniramine	Atorvastatin	Amoxicillin	Albuterol	
Desipramine	Azithromycin	Atenolol	Allopurinol	2 in BCS / 3 in BDDCS
Dexamethasone	Carbamazepine	Atropine	Antipyrine	1
Diazepam	Carvedilol	Bisphosphonates	Caffeine	Valsartan
Diltiazem	Chlorpromazine	Captopril	Chloramphenicol	
Diphenhydramine	Cisapride	Cefazolin	Codeine	
Disopyramide	Clofazamine	Cimetidine	Colchicine	2 in BCS / 4 in BDDCS
Doxepin	Cycloserpine	Ciprofloxacin	Cyclophosphamide	3
Ergotamine	Danazol	Doxycycline	Enalapril	Furosemide
Ethinyl Estradiol	Diclofenac	Ephedrine	Ergonovine	Phenazopyridine
Fluoxetine	Diflunisal	Ethambutol	Glucose	Talinolol
Imipramine	Efavirenz	Famotidine	Hydralazine	
Ketorolac	Flurbiprofen	Fluconazole	Isoniazid	
Levamisole	Glipizide	Folinic acid	Isosorbide dinitrate	4 in BCS/ 2 in BDDCS
Lidocaine	Glyburide	Ganciclovir	Levodopa	3
Meperidine	Griseofulvin	Hydrochlorothiazide	Metronidazole	Azathioprine
Metoprolol	Haloperidol	Lamivudine	Minocycline	Dapsone
Midazolam	Ibuprofen	Levofloxacin	Morphine	Sulfamethoxazole
Misoprostol	Indinavir	Lisinopril	Phenylalanine	
Phenobarbital	Indomethacin	Lomefloxacin	Pyrazinamide	
Prednisolone	Itraconazole	Metformin	Theophylline	4 in BCS/ 3 in BDDCS
Primaquine	Ivermectin	Methotrexate	Zidovudine	1
Promazine	Ketoconazole	Nadolol		Trimethoprim
Promethazine	Lansoprazole	Neostigmine		
Propranolol	Lopinavir	Pyridostigmine	1 in BCS / 3 in BDDCS	
Quinidine	Lovastatin	Ranitidine	9	
Quinine	Mebendazole	Riboflavin	Bidisomide	
Rosiglitazone	Mefloquin	Tetracycline	Cetirizine	
Salicylic acid	Nalidixic acid	Zalcitabine	Chloroquine	
Valproic acid	Naproxen		Cloxacillin	
Verapamil	Nelfinavir		Dicloxacillin	
	Nevirapine		Erythromycin	
	Oxaprozin		Fexofenadine	
	Phenytoin		Metoclopramide	
	Piroxicam		Pravastatin	
	Praziquantel	7		
	Raloxifene	Acetazolamide		3 in BCS / 4 in BDDCS
	Rifampin	Amphotericin B	2	
	Ritonavir	Chlorothiazide	Chlorthalidone	
	Saquinavir	Colistin	Digoxin	
	Sirolimus	Neomycin		
	Spironolactone	Nystatin		
	Tacrolimus	Ofloxacin		
	Tamoxifen			
	Terfenadine			
	Warfarin			

Table SI7. BCS (CLogP cimetidine) vs BDDCS

Class 1 in both	Class 2 in both	Class 3 in both	Class 4 in both	1 in BCS / 3 in BDDCS
44	51	25	7	15
Abacavir	Albendazole	Acyclovir	Acetazolamide	Atropine
Acetaminophen	Amiodarone	Amiloride	Amphotericin	Bidisomide
Allopurinol	Atorvastatin	Amoxicillin	Chlorothiazide	Captopril
Amitryptiline	Azathioprine	Atenolol	Colistin	Cetirizine
Buspirone	Azithromycin	Bisphosphonates	Neomycin	Chloroquine
Chloramphenicol	Carbamazepine	Cefazolin	Nystatin	Cimetidine
Chlorpheniramine	Carvedilol	Ciprofloxacin	Oflloxacin	Cloxacillin
Codeine	Chlorpromazine	Doxycycline		Dicloxacillin
Colchicine	Cisapride	Ethambutol		Ephedrine
Cyclophosphamide	Clofazamine	Famotidine		Erythromycin
Desipramine	Cyclosporine	Fluconazole		Fexofenadine
Dexamethasone	Danazol	Folinic acid		Metoclopramide
Diazepam	Dapsone	Ganciclovir		Nadolol
Diltiazem	Diclofenac	Hydrochlorothiazide		Pravastatin
Diphenhydramine	Diflunisal	Lamivudine		Ranitidine
Disopyramide	Efavirenz	Levofloxacin		
Doxepin	Flurbiprofen	Lisinopril	2 in BCS / 1 in BDDCS	1 in BCS / 4 in BDDCS
Enalapril	Glipizide	Lomefloxacin	2	2
Ergonovine	Glyburide	Metformin	Ketoprofen	Chlorthalidone
Ergotamine	Griseofulvin	Methotrexate	Nifedipine	Digoxin
Ethinyl Estradiol	Haloperidol	Neostigmine		
Fluoxetine	Ibuprofen	Pyridostigmine		
Hydralazine	Indinavir	Riboflavin		
Imipramine	Indomethacin	Tetracycline	2 in BCS / 3 in BDDCS	3 in BCS / 1 in BDDCS
Ketorolac	Itraconazole	Zalcitabine	2	13
Levamisole	Ivermectin		Trimethoprim	Albuterol
Lidocaine	Ketoconazole		Valsartan	Antipyrine
Meperidine	Lansoprazole			Caffeine
Metoprolol	Lopinavir			Glucose
Midazolam	Lovastatin			Isoniazid
Misoprostol	Mebendazole			Isosorbide dinitrate
Morphine	Mefloquin			Levodopa
Phenobarbital	Nalidixic acid			Metronidazole
Prednisolone	Naproxen			Minocycline
Primaquine	Nelfinavir			Phenylalanine
Promazine	Nevirapine			Pyrazinamide
Promethazine	Oxaprozin			Theophylline
Propranolol	Phentytoin			Zidovudine
Quinidine	Piroxicam			
Quinine	Praziquantel			
Rosiglitazone	Raloxifene			
Salicylic acid	Rifampin			
Valproic acid	Ritonavir			
Verapamil	Saquinavir			
	Sirolimus			
	Spironolactone			
	Sulfamethoxazole			
	Tacrolimus			
	Tamoxifen			
	Terfenadine			
	Warfarin			

Table SI8. BCS (CLogP ranitidine) vs BDDCS

Class 1 in both 41	Class 2 in both 49	Class 3 in both 27	Class 4 in both 7	1 in BCS / 3 in BDDCS 13
Allopurinol	Albendazole	Acyclovir	Acetazolamide	Atropine
Amitryptyline	Amiodarone	Amiloride	Amphotericin B	Bidisomide
Buspirone	Atorvastatin	Amoxicillin	Chlorothiazide	Captopril
Chloramphenicol	Azithromycin	Atenolol	Colistin	Cetirizine
Chlorpheniramine	Carbamazepine	Bisphosphonates	Neomycin	Chloroquine
Codeine	Carvedilol	Cefazolin	Nystatin	Cloxacillin
Colchicine	Chlorpromazine	Cimetidine	Oflloxacin	Dicloxacillin
Cyclophosphamide	Cisapride	Ciprofloxacin		Ephedrine
Desipramine	Clofazamine	Doxycycline		Erythromycin
Dexamethasone	Cyclosporine	Ethambutol	2 in BCS / 1 in BDDCS 2	Fexofenadine
Diazepam	Danazol	Famotidine	Ketoprofen	Metoclopramide
Diltiazem	Dapsone	Fluconazole	Nifedipine	Pravastatin
Diphenhydramine	Diclofenac	Folinic acid		Ranitidine
Disopyramide	Diflunisal	Ganciclovir		
Doxepin	Efavirenz	Hydrochlorothiazide		
Enalapril	Flurbiprofen	Lamivudine	2 in BCS / 3 in BDDCS 2	3 in BCS / 1 in BDDCS 16
Ergonovine	Glipizide	Levofloxacin	Trimethoprim	Abacavir
Ergotamine	Glyburide	Lisinopril	Valsartan	Acetaminophen
Ethinyl Estradiol	Griseofulvin	Lomefloxacin		Albuterol
Fluoxetine	Haloperidol	Metformin		Antipyrine
Hydralazine	Ibuprofen	Methotrexate		Caffeine
Imipramine	Indinavir	Nadolol	2 in BCS / 4 in BDDCS 3	Glucose
Ketorolac	Indomethacin	Neostigmine		Isoniazid
Levamisole	Itraconazole	Pyridostigmine	Furosemide	Isosorbide dinitrate
Lidocaine	Ivermectin	Riboflavin	Phenazopyridine	Levodopa
Meperidine	Ketoconazole	Tetracycline	Talinolol	Metronidazole
Metoprolol	Lansoprazole	Zalcitabine		Minocycline
Midazolam	Lopinavir			Morphine
Misoprostol	Lovastatin			Phenylalanine
Phenobarbital	Mebendazole		1	Pyrazinamide
Prednisolone	Mefloquin		Digoxin	Theophylline
Primaquine	Nalidixic acid			Zidovudine
Promazine	Naproxen			
Promethazine	Nelfinavir			
Propranolol	Nevirapine			
Quinidine	Oxaprozin		4 in BCS / 2 in BDDCS 2	
Quinine	Phenytoin		Azathioprine	3 in BCS / 4 in BDDCS 1
Rosiglitazone	Piroxicam		Sulfamethoxazole	Chlorthalidone
Salicylic acid	Praziquantel			
Valproic acid	Raloxifene			
Verapamil	Rifampin			
	Ritonavir			
	Saquinavir			
	Sirolimus			
	Spironolactone			
	Tacrolimus			
	Tamoxifen			
	Terfenadine			
	Warfarin			

Table SI9. BCS (CLogP atenolol) vs BDDCS

Class 1 in both 51	Class 2 in both 51	Class 3 in both 21	Class 4 in both 7	1 in BCS / 3 in BDDCS 19
Abacavir	Albendazole	Acyclovir	Acetazolamide	Amiloride
Acetaminophen	Amiodarone	Amoxicillin	Amphotericin	Atenolol
Albuterol	Atorvastatin	Bisphosphonates	Chlorothiazide	Atropine
Allopurinol	Azathioprine	Cefazolin	Colistin	Bidismide
Amitryptiline	Azithromycin	Ciprofloxacin	Neomycin	Captopril
Antipyrine	Carbamazepine	Doxycycline	Nystatin	Cetirizine
Buspirone	Carvedilol	Famotidine	Oflloxacin	Chloroquine
Caffeine	Chlorpromazine	Fluconazole		Cimetidine
Chloramphenicol	Cisapride	Folinic acid		Cloxacillin
Chlorpheniramine	Clofazamine	Ganciclovir	1 in BCS / 4 in BDDCS 2	Dicloxacillin
Codeine	Cyclosporine	Hydrochlorothiazide	Chlorthalidone	Ephedrine
Colchicine	Danazol	Lamivudine	Digoxin	Erythromycin
Cyclophosphamide	Dapsone	Levofloxacin		Ethambutol
Desipramine	Diclofenac	Lisinopril		Fexofenadine
Dexamethasone	Diflunisal	Metformin		Lomefloxacin
Diazepam	Efavirenz	Methotrexate	2 in BCS / 1 in BDDCS 2	Metoclopramide
Diltiazem	Flurbiprofen	Neostigmine	Ketoprofen	Nadolol
Diphenhydramine	Glipizide	Pyridostigmine	Nifedipine	Pravastatin
Disopyramide	Glyburide	Riboflavin		Ranitidine
Doxepin	Griseofulvin	Tetracycline		
Enalapril	Haloperidol	Zalcitabine		
Ergonovine	Ibuprofen		2 in BCS / 3 in BDDCS 2	3 in BCS / 1 in BDDCS 6
Ergotamine	Indinavir		Trimethoprim	Glucose
Ethinyl Estradiol	Indomethacin		Valsartan	Isoniazid
Fluoxetine	Itraconazole			Levodopa
Hydralazine	Ivermectin			Metronidazole
Imipramine	Ketoconazole			Phenylalanine
Isosorbide dinitrate	Lansoprazole		2 in BCS / 4 in BDDCS 3	Pyrazinamide
Ketorolac	Lopinavir		Furosemide	
Levamisole	Lovastatin		Phenazopyridine	
Lidocaine	Mebendazole		Talinolol	
Meperidine	Mefloquin			
Metoprolol	Nalidixic acid			
Midazolam	Naproxen			
Minocycline	Nelfinavir			
Misoprostol	Nevirapine			
Morphine	Oxaprozin			
Phenobarbital	Phenytoin			
Prednisolone	Piroxicam			
Primaquine	Praziquantel			
Promazine	Raloxifene			
Promethazine	Rifampin			
Propranolol	Ritonavir			
Quinidine	Saquinavir			
Quinine	Sirolimus			
Rosiglitazone	Spirostanolactone			
Salicylic acid	Sulfamethoxazole			
Theophylline	Tacrolimus			
Valproic acid	Tamoxifen			
Verapamil	Terfenadine			
Zidovudine	Warfarin			