

Cytochrome P450 Drug Interaction Table

This table is designed as a hypothesis testing, teaching and reference tool for physicians and researchers interested in drug interactions that are the result of competition for, or effects on the human cytochrome P450 system.

The table contains lists of drugs in columns under the designation of specific cytochrome P450 isoforms. A drug appears in a column if there is published evidence that it is metabolized, at least in part, via that isoform. It does not necessarily follow that the isoform is the principal metabolic pathway *in vivo*, or that alterations in the rate of the metabolic reaction catalyzed by that isoform will have large effects on the pharmacokinetics of the drug.

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SUBSTRATES

<u>1A2</u>	<u>2B6</u>	<u>2C19</u>	<u>2C9</u>	<u>2D6</u>	<u>2E1</u>	<u>3A4.5.7</u>
amitriptyline caffeine clomipramine clozapine cyclobenzaprine (Flexeril [®]) estradiol fluvoxamine haloperidol imipramine N-DeMe mexiletine naproxen ondansetron phenacetin=> acetaminophen =>NAPQI propranolol riluzole ropivacaine tacrine theophylline verapamil (R)warfarin zileuton	bupropion cyclophosphamide ifosfamide	Proton Pump Inhibitors: lansoprazole omeprazole pantoprazole E-3810 Anti-epileptics: diazepam=>Nor phenytoin(O) S-mephenytoin phenobarbitone amitriptyline citalopram clomipramine cyclophosphamide hexobarbital imipramine N-DeMe indomethacin R-mephobarbital moclobemide nelfinavir nilutamide	NSAIDs: diclofenac ibuprofen meloxicam S- naproxen=>Nor piroxicam suprofen Oral Hypoglycemic Agents: tolbutamide glipizide Angiotensin II Blockers: losartan irbesartan amitriptyline celecoxib fluoxetine fluvastatin glyburide	Beta Blockers: carvedilol S-metoprolol propafenone timolol Antidepressants: amitriptyline clomipramine desipramine imipramine paroxetine Antipsychotics: haloperidol perphenazine risperidone=>9OH thioridazine alprenolol amphetamine bufuralol chlorpheniramine chlorpromazine codeine (=>O-desMe)	Anesthetics: enflurane halothane isoflurane methoxyflurane sevoflurane acetaminophen =>NAPQI aniline benzene chlorzoxazone ethanol N,N-dimethyl formamide theophylline =>8-OH	Macrolide antibiotics: clarithromycin erythromycin (not 3A5) NOT azithromycin Anti-arrhythmics: quinidine=>3-OH (not 3A5) Benzodiazepines: alprazolam diazepam=>3OH midazolam triazolam Immune Modulators: cyclosporine tacrolimus (FK506) HIV Antivirals:

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zolmitriptan		primidone progesterone proguanil propranolol teniposide R-warfarin=>8-OH	phenytoin=>4-OH rosiglitazone tamoxifen torsemide S-warfarin	debrisoquine dexfenfluramine dextromethorphan encainide flecainide fluoxetine fluvoxamine lidocaine metoclopramide methoxyamphetamine mexiletine nortriptyline minaprine ondansetron perhexiline phenacetin phenformin propranolol (=>4OH) quanoxan sparteine tamoxifen tramadol venlafaxine		indinavir nelfinavir ritonavir saquinavir Prokinetic: cisapride Antihistamines: astemizole chlorpheniramine terfenidine Calcium Channel Blockers: amlodipine diltiazem felodipine lercanidipine nifedipine nisoldipine nitrendipine verapamil HMG CoA Reductase Inhibitors: atorvastatin cerivastatin

1A2	2B6	2C19	2C9	2D6	2E1	3A4.5.7
						lovastatin NOT pravastatin simvastatin
						Steroid 6beta-OH: estradiol hydrocortisone progesterone testosterone
						Miscellaneous: alfentanyl buspirone caffeine=>TMU cocaine dapsone=>N-OH codeine- N-demethylation dextromethorphan fentanyl finasteride haloperidol irinotecan LAAM lidocaine methadone odanestron pimozide

1A2	2B6	2C19	2C9	2D6	2E1	3A4.5.7
						propranolol quinine salmeterol sildenafil tamoxifen taxol terfenadine trazodone vincristine zaleplon zolpidem
INHIBITORS(Ki)						
1A2	2B6	2C19	2C9	2D6	2E1	3A4.5.7
amiodarone cimetidine fluoroquinolones fluvoxamine furafylline interferon? methoxsalen mibefradil ticlopidine	thiotepa	cimetidine felbamate fluoxetine fluvoxamine indomethacin ketoconazole lansoprazole modafinil omeprazole paroxetine probenicid ticlopidine topiramate	amiodarone fluconazole fluvastatin fluvoxamine isoniazid lovastatin paroxetine phenylbutazone probenicid sertraline sulfamethoxazole sulfaphenazole teniposide trimethoprim	amiodarone celecoxib chlorpromazine chlorpheniramine cimetidine clomipramine cocaine doxorubicin fluoxetine halofantrine red-haloperidol levomepromazine metoclopramide methadone	diethyl- dithiocarbamate disulfiram	HIV Antivirals: delaviridine indinavir nelfinavir ritonavir saquinavir <hr/> amiodarone NOT azithromycin cimetidine ciprofloxacin clarithromycin diethyl-

1A2	2B6	2C19	2C9	2D6	2E1	3A4.5.7
			zafirlukast	mibefradil moclobemide paroxetine quinidine ranitidine ritonavir sertraline terbinafine		dithiocarbamate diltiazem erythromycin fluconazole fluvoxamine gestodene grapefruit juice itraconazole ketoconazole mifepristone nefazodone norfloxacin norfluoxetine mibefradil troleandomycin

INDUCERS

1A2	2B6	2C19	2C9	2D6	2E1	3A.4.5.7
roccoli brussel sprouts char-grilled meat insulin methyl cholanthrene modafinil nafcillin? beta-	phenobarbital <PHENYTOIN< a> rifampin	carbamazepine norethindrone NOT pentobarbital prednisone rifampin	rifampin secobarbital	dexamethasone rifampin?	ethanol isoniazid	HIV Antivirals: rifabutin efavirenz nevirapine <hr/> barbiturates carbamazepine glucocorticoids modafinil phenobarbital

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naphthoflavone omeprazole tobacco						phenytoin pioglitazone rifampin St. John's wort troglitazone
GENETICS						
<u>1A2</u>	<u>2B6</u>	<u>2C19</u>	<u>2C9</u>	<u>2D6</u>	<u>2E1</u>	<u>3A4.5.7</u>
Chromosome 15	Chromosome 19	Chromosome 10	Chromosome 10	Chromosome 22	Chromosome 10	Chromosome 7
N/A	Polymorphic	Polymorphic	Polymorphic	Polymorphic	N/A	N/A
N/A	3-4% Caucasians PMs	3-5% Caucasian PMs , 15-20% Asian PMs	1-3% Caucasian PMs	5-10% Caucasian PMs	N/A	N/A