

How to Use This Table

This is an illustrative guide to the cytochrome P450 contribution to drug interactions likely for medication pairs that are substrates, inhibitors or inducers of the same enzyme. More than one-half of patients also carry genetic variations in CYP 1A2, 2C9, 2C19, and 2D6 genes that can dramatically alter patient drug exposures, and for which DNA testing can be ordered. The GeneMedRx drug interaction software provides a more complete and automated tool for comprehensive medication management, with optional input of genetic variations, OTCs, foods, herbals, and other relevant patient factors to produce drug interaction reports based on the cumulative effect of all known drug metabolism variables. Obtain a fully functional 30-day free trial at www.GeneMedRx.com or call 1-800-837-8362.

P450 DRUG-INTERACTIONS SUBSTRATES TABLE (compiled by Jessica Oesterheld, M.D.)

Substrates (primary enzyme for metabolism) <i>italics = brand name</i> {brackets} = minor or less potent bold = potent (p) = pro-drug > = entire class or group							
1A2	2B6	2C8	2C19	2C9	2D6	3A4,5,7	
Psychotropics: amitriptyline chlorpromazine clomipramine clozapine duloxetine fluphenazine fluvoxamine imipramine melatonin {mirtazapine} {olanzapine} perphenazine propafenone {propranolol} ramelteon <i>Rozepam</i> thioridazine thiothixene trifluoperazine Other: anagrelide caffeine cinacalcet cyclobenzaprine <i>Flexeril</i> dacarbazine erlotinib flutamide frovatriptan lidocaine mexiletine naproxen ondansetron {phenacetin} R-warfarin propranolol R-warfarin riluzole <i>Rilutek</i> ropinirole ropivacaine <i>Naropin</i> tacrine <i>Cognex</i> theophylline tizanidine <i>Zanaflex</i> zileuton <i>Zylo</i> zolmitriptan <i>Zomig</i>	bupropion cyclophosphamide (p) efavirine <i>Sustiva</i> ifosfamide (p) ketamine meperidine methadone {nicotine} propofol sertraline selegiline {tamoxifen} testosterone	{amiodarone} {carbamazepine} repaglitazone rosiglitazone taxols toremide {verapamil} {zopiclone}	Psychotropics: amitriptyline citalopram clomipramine diazepam escitalopram flunitrazepam {fluoxetine} imipramine moclobemide sertraline trimipramine Anticonvulsants: mephenytoin phenytoin Proton Pump Inhibitors: {esomeprazole} lansoprazole omeprazole {pantoprazole} Others: carisoprodol <i>Soma</i> cimetidine clobazam (p) <i>Plavix</i> cyclophosphamide (p) ifosfamide {p} nelfinavir proguanil (p) <i>Malarone</i> propranolol R-warfarin tolbutamide voriconazole	Psychotropics: fluoxetine {sertraline} valproic acid NSAIDs: aceclofenac celecoxib diclofenac flurbiprofen ibuprofen indomethacin lornoxicam meloxicam {naproxen} piroxicam suprofen tenoxicam Hypoglycemics: chlorpropamide glipizide <i>Glucotrol</i> Glimepiride <i>Amaryl</i> glyburide <i>DiaBeta</i> nateglinide <i>Starlix</i> {rosiglitazone} {Avandia} tolbutamide <i>Orinase</i> Others: bosentan candesartan <i>Atacand</i> fluvastatin <i>Lescol</i> irbesartan losartan <i>Cozaar</i> (p) phenobarbital phenytoin sulfa drugs {tamoxifen} S-warfarin tetrahydrocannabinol (marijuana) toremide <i>Tomide</i>	Psychotropics: amphetamines amitriptyline aripiprazole atomoxetine benzotropine chlorpromazine {citalopram} clomipramine desipramine doxepin duloxetine fluoxetine fluvoxamine haloperidol imipramine mirtazapine nortriptyline paroxetine perphenazine risperidone {sertraline} thioridazine venlafaxine Antihistamines: chlorpheniramine diphenhydramine hydroxyzine <i>Atarax</i> Beta Blockers: carvedilol metoprolol propranolol timolol >Cough Medicines Opiates: codeine(p) hydrocodone (p) {oxycodone} tramadol Others: dolesetron(p) doxorubicin encainide MDMA (ecstasy) metoclopramide <i>Reglan</i> mexiletine phenacetin propafenone <i>Rythmol</i> {ranitidine} {Zantac} tamoxifen(p) tolterodine <i>Detrol</i> tropisetron	Psychotropics: alprazolam amitriptyline aripiprazole buspirone carbamazepine citalopram {clomipramine} {clozapine} {diazepam} estazolam eszopiclone <i>Lunesta</i> fluoxetine haloperidol midazolam nefazodone pimozone quetiapine risperidone sertraline trazodone triazolam zaleplon <i>Sonata</i> {ziprasidone} zolpidem <i>Ambien</i> Drugs of abuse/treatment: buprenorphine cocaine fentanyl ketamine methadone oxycodone phenylcyclidine <i>PCP</i> Antibiotics/Antifungals: macrolides (not azithromycin) itraconazole ketoconazole telithromycin <i>Ketek</i> Anticonvulsants: carbamazepine ethosuximide felbamate tiagabine <i>Gabitril</i> Zonisamide <i>Zonegran</i> Antihistamines: Desloratadine <i>Claritin</i> fexofenadine <i>Allegra</i> loratadine <i>Claritin</i>	Asthma Medication: fluticasone <i>Flovent</i> salmeterol <i>Serevent</i> zileuton <i>Zylo</i> >Calcium Channel Blockers Hormones/chemo therapeutics: cortisols desogestrel (p) ethinyl estradiol <i>OCs</i> progestins /progesterone vincristine and others Others: aprepitant <i>Emend</i> cinacalcet esomeprazole granisetron nateglinide <i>Starlix</i> omeprazole pioglitazone <i>Actos</i> quinine sildenafil Statins (atorvastatin, lovastatin, simvastatin) tolterodine <i>Detrol</i>

800-TEST-DNA (800-837-8362)

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P450 DRUG-INTERACTIONS INHIBITORS TABLE (compiled by Jessica Oesterheld, M.D.)

Inhibitors (reduces or blocks the ability of the enzyme to metabolize the substrates)						
1A2	2B6	2C8	2C19	2C9	2D6	3A4,5,7
acyclovir amiodarone caffeine cimetidine ciprofloxacin enoxacin echinacea enoxacin famotidine flutamide fluvoxamine grapefruit juice lidocaine lomefloxacin mexiletine Mexitil moclobemide norfloxacin ofloxacin oral contraceptives perphenazine phenacetin propafenone ropinirole tacrine ticlopidine tocinide verapamil zileuton Zyllo	clopidogrel Plavix efavirenz fluoxetine fluvoxamine ketoconazole memantine nelfinavir oral contraceptives paroxetine ritonavir thiotepa ticlopidine Ticlid	gemfibrozil glitazones trimethoprim	artemisinin chloramphenicol delavirdine efavirenz esomeprazole felbamate {fluconazole} {fluoxetine} fluvoxamine indomethacin inh modafinil <i>Provigil</i> omeprazole <i>Prilosec</i> oral contraceptives oxcarbazepine ticlopidine topiramate voriconazole	amiodarone anastrozole cimetidine delavirdine efavirenz fenofibrate <i>Tricor</i> fluconazole {fluoxetine} fluvoxamine fluvastatin isoniazid ketoconazole leflunomide modafinil phenylbutazone {sertraline} sulfamethoxazole sulfaphenazole tamoxifen teniposide valproic acid voriconazole <i>Vfend</i> {zafirlukast}, <i>(Accolate)</i> 5-fluorouracil	amiodarone {amitriptyline} bupropion celecoxib chlorpheniramine chlorpromazine cimetidine cinacalcet {citalopram} chlorpheniramine clomipramine {desipramine} diphenhydramine doxepin duloxetine {fluvoxamine} fluoxetine goldenseal halofantrine haloperidol {hydroxyzine} imipramine methadone metoclopramide moclobemide paroxetine pimozide propafenone quinidine/quinine ritonavir {sertraline} terbinafine thioridazine ticlopidine	amiodarone amprenavir aprepitant -initially atazanavir <i>Reyataz</i> {cimetidine} ciprofloxacin clarithromycin delavirdine diltiazem doxycycline echinacea enoxacin erythromycin fluconazole fluvoxamine grapefruit juice indinavir itraconazole ketoconazole miconazole nefazodone nelfinavir ritonavir and boosted PIs saquinavir telithromycin verapamil voriconazole

P450 DRUG-INTERACTIONS INDUCERS TABLE (compiled by Jessica Oesterheld, M.D.)

Inducers (increases the ability of the enzyme to metabolize the substrates)						
1A2	2B6	2C8	2C19	2C9	2D6	3A4,5,7
carbamazepine charbroiled meat cigarette smoke cruciferous veggies esomeprazole griseofulvin insulin lansprazole marijuana smoke moricizine omeprazole rifampin ritonavir	lopinavir/ritonavir phenobarbital phenytoin rifampin	rifampin	ginkgo biloba rifampin St John's Wort	aprepitant-long term barbiturates bosentan carbamazepine rifampin-chronic ritonavir and boosted PIs St John's Wort-long term	?rifampin	aprepitant -long term barbiturates bosentan carbamazepine efavirenz felbamate glucocorticoids modafinil nafcillin nevirapine {oxcarbazepine} phenytoin primidone rifampins St John's Wort pioglitazone <i>Actos</i> topiramate at >200 mg/d

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