

## MEDICATIONS METABOLIZED BY CYTOCHROME P450 3A4

INHIBITORS	SUBSTRATES*		INDUCERS																																																																																								
<p><b>Strong (<math>\geq 5</math>-fold increase in level or <math>&gt;80\%</math> decrease in clearance)</b></p> <table style="width: 100%; border: none;"> <tr><td style="width: 50%;">atazanavir</td><td style="width: 50%;">itraconazole</td></tr> <tr><td>boceprevir</td><td>ketoconazole</td></tr> <tr><td>darunavir</td><td>posaconazole</td></tr> <tr><td>delavirdine</td><td>voriconazole</td></tr> <tr><td>efavirenz</td><td></td></tr> <tr><td>fosamprenavir</td><td>cannabidiol</td></tr> <tr><td>indinavir</td><td>citalopram</td></tr> <tr><td>lopinavir</td><td>escitalopram</td></tr> <tr><td>nelfinavir</td><td>imatinib</td></tr> <tr><td>ritonavir</td><td>isoniazid</td></tr> <tr><td>saquinavir</td><td>quinidine</td></tr> <tr><td>teloprevir</td><td></td></tr> <tr><td></td><td>clarithromycin</td></tr> <tr><td></td><td>telithromycin</td></tr> <tr><td></td><td>(not azithromycin)</td></tr> </table> <p><b>Moderate (<math>\geq 2</math> to <math>&lt;5</math>-fold increase in level or 50-80% decrease in clearance)</b></p> <table style="width: 100%; border: none;"> <tr><td style="width: 50%;">amiodarone</td><td style="width: 50%;">grapefruit juice</td></tr> <tr><td>amprenavir</td><td>haloperidol</td></tr> <tr><td>aprepitant</td><td>lapatinib</td></tr> <tr><td>cimetidine</td><td>lidocaine</td></tr> <tr><td>caffeine</td><td>miconazole</td></tr> <tr><td>cyclosporine</td><td>norfloxacin</td></tr> <tr><td>desipramine</td><td>tetracycline</td></tr> <tr><td>diltiazem</td><td>verapamil</td></tr> <tr><td>doxycycline</td><td></td></tr> <tr><td>dronedarone</td><td></td></tr> <tr><td>erythromycin</td><td></td></tr> <tr><td>fluconazole</td><td></td></tr> </table> <p><b>Miscellaneous</b></p> <table style="width: 100%; border: none;"> <tr><td style="width: 50%;">amlodipine</td><td style="width: 50%;">propranolol</td></tr> <tr><td>cannabinoid</td><td>quinine</td></tr> <tr><td>chloramphenicol</td><td>ranitidine</td></tr> <tr><td>ciprofloxacin</td><td>sildenafil</td></tr> <tr><td>cobicistat</td><td>starfruit</td></tr> <tr><td>danazol</td><td>ticagrelor</td></tr> <tr><td>diethyldithiocarbamate</td><td>zafirlukast</td></tr> <tr><td>ergotamine</td><td></td></tr> <tr><td>ethinyl estradiol</td><td></td></tr> <tr><td>fluoxetine</td><td></td></tr> <tr><td>fluvoxamine</td><td></td></tr> <tr><td>marijuana</td><td></td></tr> <tr><td>nifedipine</td><td></td></tr> <tr><td>norfluoxetine</td><td></td></tr> <tr><td>olanzapine</td><td></td></tr> <tr><td>paclitaxel</td><td></td></tr> <tr><td>pimozide</td><td></td></tr> </table>	atazanavir	itraconazole	boceprevir	ketoconazole	darunavir	posaconazole	delavirdine	voriconazole	efavirenz		fosamprenavir	cannabidiol	indinavir	citalopram	lopinavir	escitalopram	nelfinavir	imatinib	ritonavir	isoniazid	saquinavir	quinidine	teloprevir			clarithromycin		telithromycin		(not azithromycin)	amiodarone	grapefruit juice	amprenavir	haloperidol	aprepitant	lapatinib	cimetidine	lidocaine	caffeine	miconazole	cyclosporine	norfloxacin	desipramine	tetracycline	diltiazem	verapamil	doxycycline		dronedarone		erythromycin		fluconazole		amlodipine	propranolol	cannabinoid	quinine	chloramphenicol	ranitidine	ciprofloxacin	sildenafil	cobicistat	starfruit	danazol	ticagrelor	diethyldithiocarbamate	zafirlukast	ergotamine		ethinyl estradiol		fluoxetine		fluvoxamine		marijuana		nifedipine		norfluoxetine		olanzapine		paclitaxel		pimozide		<p><b>Macrolide Antibiotics</b></p> <p>clarithromycin erythromycin (not azithromycin)</p> <p><b>Anti-arrhythmics</b></p> <p>quinidine <math>\rightarrow</math> 3-OH</p> <p><b>Benzodiazepines</b></p> <p>alprazolam clobazam clonazepam diazepam <math>\rightarrow</math> 3-OH midazolam triazolam</p> <p><b>Immune Modulators</b></p> <p>cyclosporine tacrolimus</p> <p><b>HIV Antivirals</b></p> <p>atazanavir cobicistat darunavir fosamprenavir indinavir nelfinavir ritonavir saquinavir</p> <p><b>Antihistamines</b></p> <p>chlorpheniramine</p> <p><b>Calcium Channel Blockers</b></p> <p>amlodipine diltiazem felodipine nifedipine verapamil</p> <p><b>HMG CoA Reductase Inhibitors</b></p> <p>atorvastatin lovastatin simvastatin (not pravastatin or rosuvastatin)</p> <p><b>Steroids</b></p> <p>estradiol hydrocortisone progesterone testosterone</p>	<p><b>Miscellaneous</b></p> <p>alfentanyl amiodarone aprepitant bisoprolol bosentan bromocriptine buprenorphine buspirone cafergot caffeine calcitriol carbamazepine chloroquine citalopram colchicine cocaine codeine dapson dasatinib dexamethasone dihydroergotamine docetaxel doxepin doxorubicin eletriptan ergotamine erlotinib fentanyl finasteride gleevec haloperidol irinotecan lidocaine marijuana methadone nateglinide ondanestron pimozide quinine salmeterol sildenafil sirolimus tamoxifen taxol tramadol trazodone vincristine zopiclone</p>	<p><b>Strong</b></p> <p>efavirenz etravirine nevirapine nelfinavir ritonavir</p> <p>barbiturates bosentan carbamazepine fosphenytoin glucocorticoids modafinil oxcarbazepine pentobarbital phenobarbital phenytoin primidone rifampin rifabutin</p> <p><b>Miscellaneous</b></p> <p>clobazam ethosuximide phenylbutazone St. John's wort tipranavir topiramate</p>
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\*These medications may also alter the metabolism of methadone.

**Note:** Combination with quetiapine is contraindicated – the mechanism of interaction is thought to be via CYP 2D6 and p-glycoprotein (not via CYP3A4), and is therefore not listed in this table, but it is an important interaction.

Adapted from Flockhart DA. Drug Interactions: Cytochrome P450 Drug Interaction Table. Indiana University School of Medicine (2007).  
<http://medicine.iupui.edu/clinpharm/ddis/table.asp>. For updated information on cytochrome P450 drug interactions, see [www.drug-interactions.com](http://www.drug-interactions.com).

Adapted from Canadian Pharmacists Letter (2013)

Referenced with Lexicomp Online