TEXAS Health and Human Services

Cytochrome P450 Drug Metabolism/Inhibition

For a complete list see: http://medicine.iupui.edu/clinpharm/ddis/

Adapted from Indiana University Department of Medicine Division of Clinical Pharmacology website.

1A2

Substrates	Significant enzyme inducers	*Significant enzyme inhibitors
Clinically Relevant	Clinically Relevant	Clinically Relevant
Clozapine	Carbamazepine	Amiodarone
Cyclobenzaprine	Chargrilled meat	Cimetidine (weak)
Duloxetine	Rifampin	Efavirenz
Fluvoxamine	Tobacco	Fluoroquinolones
Haloperidol		Fluvoxamine (strong)
Imipramine		Ticlopidine
Mexiletine		
Nabumetone		
Naproxen		
Olanzapine		
Riluzole		
Tacrine		
Theophylline		
Tizanidine		
Triamterene		
Zileuton		
Zolmitriptan		

2B6

Substrates	Significant enzyme inducers	*Significant enzyme inhibitors
Clinically Relevant	Clinically Relevant	Clinically Relevant
Artemisinin	Artemisinin	Clopidogrel
Bupropion	Carbamazepine	Thiotepa
Cyclophosphamide	Efavirenz	Ticlopidine
Efavirenz	Nevirapine	Voriconazole
Ifosfamide	Phenobarbital	
Ketamine	Phenytoin	
Meperidine	Rifampin	
Methadone		
Nevirapine		
Propofol		
Selegiline		

2C8

Substrates	Significant enzyme inducers	*Significant enzyme inhibitors
Clinically Relevant	Clinically Relevant	Clinically Relevant
Amodiaquine	None listed.	Gemfibrozil (strong)
Cerivastatin		Montelukast
Paclitaxel		
Repaglinide		
Torsemide		

2C9

Substrates	Significant enzyme inducers	*Significant enzyme inhibitors
Clinically Relevant	Clinically Relevant	Clinically Relevant
NSAIDs	Carbamazepine	Amiodarone (moderate)
Celecoxib	Nevirapine	Efavirenz
Diclofenac	Phenobarbital	Fluconazole (strong)
Ibuprofen	Rifampin	Isoniazid
Naproxen	St. John's Wort	Metronidazole
Piroxicam		Paroxetine
		Sulfamethoxazole
Oral Hypoglycemics		Voriconazole
Glipizide		
Glyburide		
Rosiglitazone		
Tolbutamide		
Angiotensin II Blockers		
Irbesartan		
Losartan		
Others		
Fluvastatin		
Phenytoin		
Torsemide		
Valproic acid		
Warfarin		
Zafirlukast		

2C19

Substrates	Significant enzyme inducers	*Significant enzyme inhibitors
Clinically Relevant	Clinically Relevant	Clinically Relevant
PPIs	Efavirenz	Cimetidine
Esomeprazole	Rifampicin	Esomeprazole
Lansoprazole	Ritonavir	Felbamate
Omeprazole	St. John's Wort	Fluoxetine
Pantoprazole		Fluvoxamine
		Isoniazid
Anti-epileptics		Ketoconazole
Diazepam		Lansoprazole
Phenobarbitone		Omeprazole
Phenytoin		Oral contraceptives
		Pantoprazole
Others		Ticlopidine
Amitriptyline		Voriconazole
Carisoprodol		
Citalopram		
Clomipramine		
Clopidogrel		
Cyclophosphamide		
Imipramine		
Labetalol		
Proguanil		
Voriconazole		

2D6

Substrates	Significant enzyme inducers	*Significant enzyme inhibitors
Clinically Relevant	Clinically Relevant	Clinically Relevant
Beta Blockers	None listed.	Bupropion (strong)
Carvedilol		Fluoxetine (strong)
S-metoprolol		Paroxetine (strong)
Propafenone		Quinidine (strong)
Timolol		
		Duloxetine (moderate)
Antidepressants		
Amitriptyline		Amiodarone (weak)
Clomipramine		Cimetidine (weak)
Desipramine		
Doxepin		Aripiprazole
Duloxetine		Chlorpheniramine
Fluoxetine		Clomipramine
Imipramine		Diphenhydramine
Paroxetine		Doxepin
Venlafaxine		Haloperidol
		Methadone
Antipsychotics		Ritonavir
Aripiprazole		Terbinafine (moderate)
Haloperidol		
Risperidone		
Thioridazine		
Others		
Atomoxetine		
Codeine		
Dextromethorphan		
Flecainide		
Mexiletine		
Ondansetron		
Oxycodone		
Tamoxifen		
Tramadol		

2E1

Substrates	Significant enzyme inducers	*Significant enzyme inhibitors
Clinically Relevant	Clinically Relevant	Clinically Relevant
Anesthetics	Ethanol	Disulfiram
Enflurane	Isoniazid	
Halothane		
Isoflurane		
Methoxyflurane		
Sevoflurane		
Others		
Acetaminophen →NAPQI		
Aniline		
Benzene		
Chlorzoxazone		
Ethanol		
N,N-dimethyl formamide		
Theophylline→8-OH		

3A4, 5, 7

Substrates	Significant enzyme inducers	*Significant enzyme inhibitors
Clinically Relevant	Clinically Relevant	Clinically Relevant
Macrolide antibiotics	Carbamazepine	**HIV Antivirals**
Clarithromycin	Efavirenz	Indinavir (strong)
Erythromycin (not 3A5)	Nevirapine	Nelfinavir (strong)
Telithromycin	Phenobarbital	Ritonavir (strong)
	Phenytoin	
Not azithromycin	Pioglitazone	
	Rifabutin	Clarithromycin (strong)
Anti-arrhythmics	Rifampin	Itraconazole (strong)
Quinidine→3-OH (not 3A5)	St. John's Wort	Ketoconazole (strong)
	Troglitazone	Nefazodone (strong)
Benzodiazepines		
Alprazolam		Diltiazem (moderate)
Diazepam →3OH		Erythromycin (moderate)
Midazolam		Grapefruit juice (moderate)
Triazolam		Verapamil (moderate)
Immune Modulators		Cimetidine (weak)
Cyclosporine		
Sirolimus		
Tacrolimus (FK506)		Amiodarone
		Fluvoxamine
HIV Antivirals		Troleandomycin
Indinavir		Voriconazole
Nevirapine		
Ritonavir		Not azithromycin
Saquinavir		
Prokinetics		
Cisapride		
Antihistamines		
Astemizole		
Chlorpheniramine		
Calcium Channel Blockers		
Amlodipine		
Diltiazem		
Felodipine		
Nifedipine		
Nisoldipine		
Nitrendipine		
Verapamil		
HMG CoA Reductase Inhibitors		
Atorvastatin		
Lovastatin		
Simvastatin		
NOT pravastatin		
NOT rosuvastatin		
PDE-5 Inhibitors		
Sildenafil		
Tadalafil		

Vardenafil **Others** Alfentanyl Aripiprazole Boceprevir Buspirone Carbamazepine Gleevec Haloperidol Pimozide Quinine Tamoxifen Telaprevir Trazodone Vincristine		

***Inhibitors**

Strong inhibitor – causes a > 5-fold increase in the plasma AUC values or more than 80% decrease in clearance

Moderate inhibitor – causes a > 2-fold increase in the plasma AUC values or 50-80% decrease in clearance

Weak inhibitor – causes a > 1.25-fold but < 2-fold increase in the plasma AUC values or 20-50% decrease in clearance