

Mechanisms of drug-drug interactions with antiretroviral drugs

Inhibition/induction of hepatic cytochromes, glucuronidation, or drug transporters

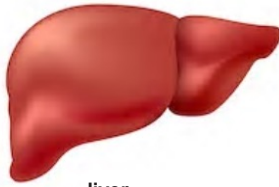
victim

cabotegravir
doravirine
rilpivirine
bictegravir
dolutegravir
raltegravir
maraviroc

perpetrator

PI/r
PI/c
elvitegravir/c
efavirenz
etravirine
nevirapine

Metabolism



liver

Inhibition of renal drug transporters

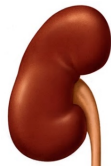
victim

tenofovir

perpetrator

bictegravir
dolutegravir
cobicistat
ritonavir

Excretion



kidney

Inhibition/induction intestinal cytochromes or drug transporters

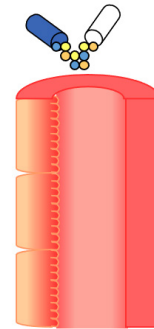
victim

doravirine
rilpivirine
bictegravir
tenofovir (TDF, TAF)
maraviroc

perpetrator

PI/r
PI/c
elvitegravir/c

Absorption



small intestine

Change gastric pH

victim

atazanavir
rilpivirine

Chelation with mineral supplements

victim

bictegravir
cabotegravir (oral)
dolutegravir
elvitegravir/c
raltegravir

Common drug-drug interactions with antiretroviral drugs

Drug-drug interactions with HIV therapy can occur with prescribed drugs, over-the counter drugs, herbal therapies and social/recreational drugs (see examples below).

Always ask your HIV specialist, general practitioner or pharmacist before taking any new medicine.

Effect	HIV drugs	Concomitant drugs/disease
Absorption: gastric pH	atazanavir, rilpivirine	- antacids - H2 receptor antagonist (cimetidine, famotidine, ranitidine) - proton pump inhibitors (lansoprazole, omeprazole, pantoprazole, rabeprazole)
Absorption: chelation	bictegravir, cabotegravir (oral), dolutegravir, elvitegravir, raltegravir	- antacids - calcium, iron, magnesium, zinc supplements
Metabolism: HIV drug impacts the concomitant drug	protease inhibitors, elvitegravir/cobicistat, efavirenz, etravirine, nevirapine	- anti-infectives: hepatitis C drugs, tuberculosis drugs, antifungals (rifabutin, itraconazole, elbasvir/grazoprevir, glecaprevir/pibrentasvir, velpatasvir, voxilaprevir) - cancer drugs - cardiovascular agents: statins, calcium channel blockers, beta blockers (diltiazem, amiodarone, metoprolol, atorvastatin, rosuvastatin) - corticosteroids (oral, inhaled, topical, injection), hormonal contraceptives (desogestrel, ethinylestradiol, fluticasone, triamcinolone, fluticasone, mometasone) - psychotropics: benzodiazepines, antidepressants, antipsychotics (alprazolam, midazolam, paroxetine, quetiapine) - recreational drugs/narcotics (heroin, morphine, ketamine, sildenafil, fentanyl) - transplant drugs (ciclosporin, tacrolimus, sirolimus) - other: ergot derivatives (ergotamine)
Metabolism: HIV drug is impacted by the concomitant drug	protease inhibitors, bictegravir, cabotegravir, dolutegravir, elvitegravir/cobicistat, doravirine, efavirenz, etravirine, nevirapine, rilpivirine	- anti-infectives: hepatitis C drugs, tuberculosis drugs, antifungals (rifampicin, itraconazole) - anticonvulsants (carbamazepine, oxcarbazepine, phenytoine) - other: St John's Wort, activated charcoal
Nephrotoxicity	tenofovir-DF	- NSAID (diclofenac) - nephrotoxic drugs

For detailed informations, go to the Liverpool drug-drug interactions website: www.hiv-druginteractions.org, EACS guidelines: www.eacsociety.org
Possibility to download the free Liverpool drug-drug interactions app (HIV i-chart) on mobile devices