Table 18. Drugs That Should Not Be Used With Selected Antiretroviral Agents Due to Proven or Predicted Pharmacokinetic Interactions  (Last updated July 14, 2016; last reviewed July 14, 2016) (page 1 of 2)

This table only lists drugs that should not be coadministered at any dose, regardless of RTV or COBI boosting (unless stated otherwise). See Tables 19 and 20 for more detailed pharmacokinetic (PK) interaction data.

<table>
<thead>
<tr>
<th>ARV Agents a,b</th>
<th>Cardiac Agents</th>
<th>Lipid-Lowering Agents</th>
<th>Anti-infective Agents</th>
<th>Antiepileptic Agents</th>
<th>Neurologic Agents</th>
<th>Herbs</th>
<th>HCV Agents c</th>
<th>Other Agents</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATV +/- RTV or COBI</td>
<td>Dronedarone Eplerenone Ivabradine Ranolazine</td>
<td>Lovastatin Simvastatin</td>
<td>Rifampin Rifapentine</td>
<td>ATV/c only: Carbamazepine Phenobarbital Phenytoin</td>
<td>Lurasidone Midazolam 0  Pimoziode Triazolam</td>
<td>St. John's wort</td>
<td>Ebasvir/ Grazyoprevir Ombitasvir Paritaprevir Simeprevir</td>
<td>Aluzosin Cisaprider Ergot derivatives Fibranaserin Inroitecan Salmeterol Sildenafil for PAH</td>
</tr>
<tr>
<td>DRV/c or DRV/r</td>
<td>Dronedarone Eplerenone Ivabradine Ranolazine</td>
<td>Lovastatin Simvastatin</td>
<td>Rifampin Rifapentine</td>
<td>DRV/c only: Carbamazepine Phenobarbital Phenytoin</td>
<td>Lurasidone Midazolam 0  Pimoziode Triazolam</td>
<td>St. John's wort</td>
<td>Dasabuvir Ebasvir/ Grazyoprevir Ombitasvir Paritaprevir Simeprevir</td>
<td>Aluzosin Cisaprider Ergot derivatives Fibranaserin Salmeterol Sildenafil for PAH</td>
</tr>
<tr>
<td>FPV +/- RTV</td>
<td>Dronedarone Eplerenone Flecaainide Ivabradine Propafenone Ranolazine</td>
<td>Lovastatin Simvastatin</td>
<td>Rifampin Rifapentine</td>
<td>None</td>
<td>Lurasidone Midazolam 0  Pimoziode Triazolam</td>
<td>St. John's wort</td>
<td>Dasabuvir Ombitasvir Paritaprevir Simeprevir</td>
<td>Aluzosin Cisaprider Ergot derivatives Fibranaserin Salmeterol Sildenafil for PAH</td>
</tr>
<tr>
<td>LPV/r</td>
<td>Dronedarone Eplerenone Ivabradine Ranolazine</td>
<td>Lovastatin Simvastatin</td>
<td>Rifampin Rifapentine</td>
<td>None</td>
<td>Lurasidone Midazolam 0  Pimoziode Triazolam</td>
<td>St. John's wort</td>
<td>Dasabuvir Ebasvir/ Grazyoprevir Ombitasvir Paritaprevir Simeprevir</td>
<td>Aluzosin Cisaprider Ergot derivatives Fibranaserin Salmeterol Sildenafil for PAH</td>
</tr>
<tr>
<td>SQV/r</td>
<td>Amiodarone Disopyramide Dofetilide Dronedarone Eplerenone Flecaainide Ivabradine Lidocaine Propafenone Quinidine Ranolazine</td>
<td>Lovastatin Simvastatin</td>
<td>Clarithromycin Dapsone Erythromycin Pentamidine (parenteral) Rifampin Rifapentine Quinine</td>
<td>None</td>
<td>Clozapine Haloperidol Lurasidone Midazolam 0  Phenoithaizines 0  Pimoziode Trazodone Triazolam Ziprasidone Garlic supple- ments</td>
<td>St. John's wort</td>
<td>Dasabuvir Ebasvir/ Grazyoprevir Ombitasvir Paritaprevir Simeprevir</td>
<td>Aluzosin Cisaprider Ergot derivatives Fibranaserin Tacrolimus Salmeterol Sildenafil for PAH</td>
</tr>
<tr>
<td>TPV/r</td>
<td>Amiodarone Dronedarone Eplerenone Flecaainide Ivabradine Propafenone Quinidine Ranolazine</td>
<td>Lovastatin Simvastatin</td>
<td>Rifampin Rifapentine</td>
<td>None</td>
<td>Lurasidone Midazolam 0  Pimoziode Triazolam</td>
<td>St. John's wort</td>
<td>Dasabuvir Ebasvir/ Grazyoprevir Ledipasvir Ombitasvir Paritaprevir Simeprevir Sofosbuvir</td>
<td>Aluzosin Cisaprider Ergot derivatives Fibranaserin Salmeterol Sildenafil for PAH</td>
</tr>
<tr>
<td>EFV</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>St. John's wort</td>
<td>Dasabuvir Ebasvir/ Grazyoprevir Ombitasvir Paritaprevir Simeprevir</td>
<td>None</td>
</tr>
</tbody>
</table>
Table 18. Drugs That Should Not Be Used With Selected Antiretroviral Agents Due to Proven or Predicted Pharmacokinetic Interactions  (Last updated July 14, 2016; last reviewed July 14, 2016) (page 2 of 2)

This table only lists drugs that should not be coadministered at any dose, regardless of RTV or COBI boosting (unless stated otherwise). See Tables 19 and 20 for more detailed pharmacokinetic (PK) interaction data.

<table>
<thead>
<tr>
<th>ARV Agentsa,b</th>
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<th>Antiepileptic Agents</th>
<th>Neurologic Agents</th>
<th>Herbs</th>
<th>HCV Agentsc</th>
<th>Other Agents</th>
</tr>
</thead>
<tbody>
<tr>
<td>ETR</td>
<td>None</td>
<td>None</td>
<td>Rifampin</td>
<td>Rifapentine</td>
<td>Carbamazepine</td>
<td>Phenoobarbital</td>
<td>Phenytoin</td>
<td>None</td>
</tr>
<tr>
<td>NVP</td>
<td>None</td>
<td>None</td>
<td>Rifapentine</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>St John’s wort</td>
</tr>
<tr>
<td>RPV</td>
<td>None</td>
<td>None</td>
<td>Rifampin</td>
<td>Rifapentine</td>
<td>Carbamazepine</td>
<td>Oxcarbazepine</td>
<td>Phenoobarbital</td>
<td>Phenytoin</td>
</tr>
<tr>
<td>MVC</td>
<td>None</td>
<td>None</td>
<td>Rifapentine</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>St John’s wort</td>
</tr>
<tr>
<td>DTG</td>
<td>Dofetilide</td>
<td>None</td>
<td>None</td>
<td>Rifampin</td>
<td>Rifapentine</td>
<td>None</td>
<td>None</td>
<td>St John’s wort</td>
</tr>
<tr>
<td>EVG/c</td>
<td>Eplerenone</td>
<td>Ivabradine</td>
<td>Lovastatin</td>
<td>Simvastatin</td>
<td>Rifampin</td>
<td>Rifapentine</td>
<td>Carbamazepine</td>
<td>Phenoobarbital</td>
</tr>
<tr>
<td>RAL</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>TAF</td>
<td>None</td>
<td>None</td>
<td>Rifabutin</td>
<td>Rifampin</td>
<td>Rifapentine</td>
<td>None</td>
<td>None</td>
<td>St John’s wort</td>
</tr>
</tbody>
</table>

a. DLV, IDV, NFV, RTV (as sole PI), T-20, and NRTIs other than TAF are not included in this table. Refer to the appropriate FDA package insert for information regarding DLV-, IDV-, NFV-, and RTV (as sole PI)-related drug interactions.

b. Certain listed drugs are contraindicated on the basis of theoretical considerations. Thus, drugs with narrow therapeutic indices and suspected metabolic involvement with CYP 3A, 2D6, or unknown pathways are included in this table. Actual interactions may or may not occur in patients.

c. HCV agents listed include only those that are commercially available at the publication of these guidelines.

d. Use of oral midazolam is contraindicated. Single-dose parenteral midazolam can be used with caution and can be given in a monitored situation for procedural sedation.

e. The manufacturer of cisapride has a limited-access protocol for patients who meet specific clinical eligibility criteria.

f. In healthy volunteer studies, a high rate of Grade 4 serum transaminase elevation was seen when a higher dose of RTV was added to LPV/r or SQV or when double-dose LPV/r was used with rifampin to compensate for rifampin’s induction effect; therefore, these dosing strategies should not be used when alternatives exist.

Suggested alternatives to:

• Lovastatin, simvastatin: Fluvastatin, pitavastatin, and pravastatin (except for pravastatin with DRV/r) have the least potential for drug-drug interactions (see Table 19a). Use atorvastatin and rosuvastatin with caution; start with the lowest possible dose and titrate based on tolerance and lipid-lowering efficacy.

• Rifampin: Rifabutin (with dosage adjustment, see Tables 19a and 19b)
• **Midazolam, triazolam**: Temazepam, lorazepam, oxazepam

• **Sildenafil for PAH**: Selexipag

**Key to Acronyms:**
- ARV = antiretroviral
- ATV = atazanavir
- CObI = cobicistat
- CYP = cytochrome P
- DLV = delavirdine
- DRV/c = darunavir/cobicistat
- DRV/r = darunavir/ritonavir
- DTG = dolutegravir
- EFV = efavirenz
- ETR = etravirine
- EVG = elvitegravir
- EVG/c = elvitegravir/cobicistat
- FDA = Food and Drug Administration
- FPV = fosamprenavir
- FTC = emtricitabine
- HCV = hepatitis C virus
- IDV = indinavir
- LPV/r = lopinavir/ritonavir
- MVC = maraviroc
- NFV = nelfinavir
- NRTI = nucleos(t)ide reverse transcriptase inhibitor
- NVP = nevirapine
- PAH = pulmonary arterial hypertension
- PI = protease inhibitor
- PI/r = ritonavir-boosted protease inhibitor
- PK = pharmacokinetic
- RPV = rilpivirine
- RTV = ritonavir
- SQV = saquinavir
- SQV/r = saquinavir/ritonavir
- TB = tuberculosis
- T-20 = enfuvirtide
- TAF = tenofovir alafenamide
- TPV/r = tipranavir/ritonavir