Table 22a. Drug Effects on Concentration of PIs

Drug Affected	Ritonavir	Saquinavir*	Nelfinavir	Amprenavir	Lopinavir/ Ritonavir	Atazanavir
Protease Inhibitors						
Indinavir (IDV)	Levels: IDV increase 2-5 times. Dose: 400/400 mg or 800/100 mg or 800/200 mg IDV/RTV bid Caution: renal events may be increased with higher IDV concentrations	Levels: IDV no effect SQV increase 4-7 times†. Dose: Insufficient data.	Levels: IDV increase 50%; NFV increase 80%. Dose: Limited data for IDV 1200 mg bid + NFV 1250 mg bid.	Levels: APV AUC increase 33%. Dose: not established.	Levels: IDV AUC and Cmin increased. Dose: IDV 600 mg bid.	Coadministration of these agents is not recommended because of potential for additive hyperbilirubinema
Ritonavir (RTV)	•	Levels: RTV no effect SQV increase 20 times†‡. Dose: 1000/100 mg SQV (sgc or hgc)/RTV bid or 400/400 mg bid	Levels: RTV no effect; NFV increase 1.5 times. Dose: RTV 400 mg bid + NFV 500-750 mg bid.	Levels: APV AUC increase 2.5–3.5-fold. Dose: 600/100 mg APV/RTV bid Or 1200/200 mg APV/RTV qd	Lopinavir is co-formulated with ritonavir as Kaletra.	ATV/r 300/100 increase ATV AUC by 238%
Saquinavir (SQV)	•	•	Levels: SQV increase 3-5 times; NFV increase 20%†. Dose: Standard NFV; Fortovase 800 mg tid or 1200 mg bid.	Levels: APV AUC decrease 32%. Dose: insufficient data.	Levels: SQV† AUC and Cmin increased. Dose: SQV 1000 mg bid, LPV/r standard.	SQV 1200 mg qd + ATV 400 qd ↑ SQV AUC by 449%, no formal recommendation
Nelfinavir (NFV)	•	•	•	Levels: APV AUC increase 1.5-fold. Dose: insufficient data.	Levels: LPV decrease 27%; NFV increase 25% Dose: Insufficient data.	•
Amprenavir (APV)	•	•	•	•	APV: AUC and Cmin increased relative to APV without RTV; APV AUC and Cmin are reduced relative to APV + RTV; LPV Cmin may be decreased relative to LPV/r Dose: APV 600-750 mg bid; LPV/r standard or consider dose increase to 533/133 mg bid. Consider monitoring PI concentrations.	•
Fosamprenavir (fos-APV)	Fos-APV: AUC and Cmin increase 100% and 400%, respectively, with 200 mg RTV. ARV-experienced should receive boosted regimen	Levels: APV AUC decrease 32%. Dose: insufficient data.	•	•	Fos-APV: Cmin decreased 64% (at dose of 700 mg bid with 100 mg bid of RTV.) LPV: Cmin decreased 53% (at LPV/r dose of 400/100). Should not be co-administered: doses are not established	•
Lopinavir/ Ritonavir (LPV/RTV)	•	•	•	•	•	No information with LPV/ATV; RTV 100 mg increases ATV AUC 238%

* Several drug interaction studies have been completed with saquinavir given as Invirase or Fortovase. Results from studies conducted with Invirase may not be applicable to Fortovase.
† Study conducted with Fortovase.
‡ Study conducted with Invirase.