



Recreational Drugs and HIV Antivirals

A Guide to
Interactions for
Clinicians

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Recreational Drugs and HIV Antivirals – A Guide to Interactions for Clinicians

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Disclaimer: Neither the AIDS Education and Training Centers nor the Health Resources and Services Administration (HRSA) condone or recommend the use of illicit drugs in any context. The data in this guide is intended for use by clinicians and other health care providers to provide advice that may reduce harm to patients who use these substances in conjunction with antiretroviral agents. The data in this guide is a compilation of information obtained from published and anecdotal studies as of September 2002.

For further information, please visit one of the following websites:

www.hivatis.org/druginteractions.html

www.hafci.org/drugs/

www.thebody.com/whatis/druguse_rec.html

www.hivguidelines.org

To obtain information about drug treatment and harm reduction contact:

www.samhsa.gov/centers/csat2002/csat_frame.html (for treatment information)

www.harmreduction.org (for harm reduction information)

www.nynjaetc.org

212-305-8291



COCAINE (coke, blow)

Increases rate of HIV viral replication in vitro. Respiratory depression, cardiac dysrhythmias, seizures, hypertension, depression, anxiety

GENERAL

PHARMACOKINETICS

Mainly metabolized by nonspecific tissue and plasma esterases; some cocaine metabolism (-10%) via CYP3A4

NNRTI's KNOWN DRUG INTERACTIONS

delavirdine (Rescriptor) ●
efavirenz (Sustiva) ●●
nevirapine (Viramune) ●●

NRTI's

abacavir (ABC, Ziagen) ●
Combivir (AZT/3TC)
SEE INDIVIDUAL COMPONENTS
didanosine (ddl, Videx) ●●
lamivudine (3TC, Epivir) ●●
stavudine (d4T, Zerit) ●●
tenofovir (Viread) ●●
Trizivir (AZT/3TC/ABC)
SEE INDIVIDUAL COMPONENTS
zalcitabine (ddC, Hivid) ●●
zidovudine (AZT, ZDV, Retrovir) ●●

Protease Inhibitors

amprenavir (Agenerase) ●●
indinavir (Crixivan) ●●
lopinavir/ritonavir (Kaletra) ●●
nelfinavir (Viracept) ●●
ritonavir (Norvir) ●●
saquinavir (Fortovase) (Invirase) ●●

No known interactions specific to this combination.
Refer to comments for this drug class in general

ECSTASY (X, MDMA)

Tachycardia, hypertension, hyperthermia, dehydration, dry mouth, tense jaw, teethgrinding, depression

CYP2D6 demethylation important in metabolism; 2D6 inhibitors are likely to increase ecstasy levels

NNRTI's KNOWN DRUG INTERACTIONS

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efavirenz (Sustiva) ●●
nevirapine (Viramune) ●●

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zalcitabine (ddC, Hivid) ●●
zidovudine (AZT, ZDV, Retrovir) ●●

No known interactions specific to this combination. Refer to comments for this drug class in general

Protease Inhibitors

amprenavir (Agenerase) ●●
indinavir (Crixivan) ●●
lopinavir/ritonavir (Kaletra) ●●
nelfinavir (Viracept) ●●
ritonavir (Norvir) ●●
saquinavir (Fortovase) (Invirase) ●●

Increase level of ecstasy

Increases risk of kidney stones due to dehydration

Potential to increase ecstasy levels

Increases ecstasy levels 5-10 times
AVOID

PATIENT
INFORMATION TO
REDUCE THE HARM

Don't Get So High You Forget To Stick To Your
Antiretroviral Regimen. Avoid Cocaine If You Have
Heart Or Liver Problems, Or High Blood Pressure.

Decrease To 1/4 Or 1/2 Tablet Of Ecstasy. Drink Plenty Of Water.

GHB (gamma-hydroxy-butyrate, grievous bodily harm, liquid X)
Seizures, bradycardia, severe respiratory depression, hypotension, coma, death

HEROIN (smack, brown junk, China, White)
Dreamlike state of warmth and well-being with small doses. CNS depression, drowsiness, respiratory depression, constricted pupils, nausea/vomiting with excessive doses

GENERAL

PHARMACOKINETICS

Utilizes CYP2D6 pathway for metabolism

Utilizes CYP3A4 pathway for metabolism

NNRTIs **KNOWN DRUG INTERACTIONS**

- delavirdine (Rescriptor) ●
- efavirenz (Sustiva) ●
- nevirapine (Viramune) ●

NRTIs

- abacavir (ABC,Ziagen) ●
- Combivir (AZT/3TC)
- SEE INDIVIDUAL COMPONENTS
- didanosine (ddl, Videx) ●
- lamivudine (3TC, Epivir) ●
- stavudine (d4T, Zerit) ●
- tenofovir (Viread) ●
- Trizivir (AZT/3TC/ABC)
- SEE INDIVIDUAL COMPONENTS
- zalcitabine (ddC,Hivid) ●
- zidovudine (AZT, ZDV, Retrovir) ●

Protease Inhibitors

- amprenavir (Agenerase) ●
- indinavir (Crixivan) ●
- lopinavir/ritonavir (Kaletra) ●
- nelfinavir (Viracept) ●
- ritonavir (Norvir) ●
- saquinavir (Fortovase) (Invirase) ●

No known interactions specific to this combination. Refer to comments for this drug class in general

Protease Inhibitors potentially increase drug levels of GHB

NNRTIs **KNOWN DRUG INTERACTIONS**

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- efavirenz (Sustiva) ●
- nevirapine (Viramune) ●

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- Combivir (AZT/3TC)
- SEE INDIVIDUAL COMPONENTS
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- lamivudine (3TC, Epivir) ●
- stavudine (d4T, Zerit) ●
- tenofovir (Viread) ●
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No known interactions specific to this combination. Refer to comments for this drug class in general

Protease Inhibitors

- amprenavir (Agenerase) ●
- indinavir (Crixivan) ●
- lopinavir/ritonavir (Kaletra) ●
- nelfinavir (Viracept) ●
- ritonavir (Norvir) ●
- saquinavir (Fortovase) (Invirase) ●

Possible decrease in heroin levels

Reduces heroin levels by 50%

PATIENT INFORMATION TO REDUCE THE HARM

The Dose You Used Last Week Can Kill You This Week. If You Choose To Use This Dangerous Drug Start With A Half-Teaspoon And Wait A Half-Hour Before Taking More. Do Not Mix With Alcohol, Tranquilizers, Pain-Killers, Or Allergy Medications. Do Not Use If You Are Alone. This Drug Should Be Avoided.

Use Your Normal Dose. You May Experience Less Hit And Less Buzz, Please Speak With Your Doctor Before Increasing Your Dosage. Use Safe Injecting. Do Not Mix With Other Recreational Drugs.

ALCOHOL

Confusion, disorientation, incoordination, loss of balance and judgement, respiratory depression, stupor, coma

GENERAL

PHARMACOKINETICS

Metabolized by alcohol dehydrogenase and aldehyde dehydrogenase; alcohol may induce CYP2E1 and CYP3A

NNRTI's

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efavirenz (Sustiva) ●
nevirapine (Viramune) ●

NRTI's

abacavir (ABC,Ziagen) ●
Combivir (AZT/3TC)

SEE INDIVIDUAL COMPONENTS

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lamivudine (3TC, Epivir) ●
stavudine (d4T, Zerit) ●
tenofovir (Viread) ●
Trizivir (AZT/3TC/ABC)

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zidovudine (AZT, ZDV, Retrovir) ●

Protease Inhibitors

amprenavir (Agenerase) ●
indinavir (Crixivan) ●
lopinavir/ritonavir (Kaletra) ●
nelfinavir (Viracept) ●
ritonavir (Norvir) ●
saquinavir (Fortovase) (Invirase) ●

KNOWN DRUG INTERACTIONS

● No known interactions specific to this combination. Refer to comments for this drug class in general

● Increased risk of pancreatitis

AMPHETAMINES (Crystal)

Paranoia, anxiety, depression, hallucinations, tachycardia, stroke, pruritis, liver damage, diarrhea, hypertension, erectile dysfunction

Metabolized by hydroxylation and deamination via CYP2D6 pathway; CYP2D6 inhibitors may increase amphetamine levels (try to avoid)

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delavirdine (Rescriptor) ●
efavirenz (Sustiva) ●
nevirapine (Viramune) ●

NRTI's

abacavir (ABC,Ziagen) ●
Combivir (AZT/3TC)

SEE INDIVIDUAL COMPONENTS

didanosine (ddl, Videx) ●
lamivudine (3TC, Epivir) ●
stavudine (d4T, Zerit) ●
tenofovir (Viread) ●
Trizivir (AZT/3TC/ABC)

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zalcitabine (ddC,Hivid) ●
zidovudine (AZT, ZDV, Retrovir) ●

Protease Inhibitors

amprenavir (Agenerase) ●
indinavir (Crixivan) ●
lopinavir/ritonavir (Kaletra) ●
nelfinavir (Viracept) ●
ritonavir (Norvir) ●
saquinavir (Fortovase) (Invirase) ●

KNOWN DRUG INTERACTIONS

● No known interactions specific to this combination. Refer to comments for this drug class in general

● Increases amphetamine blood levels 2-3 fold

**PATIENT
INFORMATION TO
REDUCE THE HARM**

If You Take ddl, Do Not Drink Alcohol. With Any Other Antiretrovirals, Try To Avoid Alcohol Or Use Modestly.

Avoid Use If You Have Heart Or Liver Problems, Or High Blood Pressure. Do Not Mix With Alcohol.

AMYL NITRITE (amyl nitrate, poppers)

Reduces glutathione levels; inhaling the fumes acts as a vasodilator (hypotension, tachycardia, headaches)

GENERAL

PHARMACOKINETICS Metabolized rapidly, probably hydrolytic denitration

NNRTI's KNOWN DRUG INTERACTIONS

delavirdine (Rescriptor) ●
efavirenz (Sustiva) ●
nevirapine (Viramune) ●

NRTI's

abacavir (ABC,Ziagen) ●
Combivir (AZT/3TC)

SEE INDIVIDUAL COMPONENTS

didanosine (ddl, Videx) ●
lamivudine (3TC, Epivir) ●
stavudine (d4T, Zerit) ●
tenofovir (Viread) ●
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Protease Inhibitors

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indinavir (Crixivan) ●
lopinavir/ritonavir (Kaletra) ●
nelfinavir (Viracept) ●
ritonavir (Norvir) ●
saquinavir (Fortovase) (Invirase) ●

● No known interactions specific to this combination.
Refer to comments for this drug class in general

BENZODIAZEPINES

CNS depression

Most agents extensively metabolized in the liver by the CYP3A4 system; lorazepam, oxazepam, and temazepam metabolized by conjugation with glucuronic acid

NNRTI's KNOWN DRUG INTERACTIONS

delavirdine (Rescriptor) ●
efavirenz (Sustiva) ●
nevirapine (Viramune) ●

NRTI's

abacavir (ABC,Ziagen) ●
Combivir (AZT/3TC)

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indinavir (Crixivan) ●
lopinavir/ritonavir (Kaletra) ●
nelfinavir (Viracept) ●
ritonavir (Norvir) ●
saquinavir (Fortovase) (Invirase) ●

● Likely inhibits benzodiazepine metabolism through CYP3A4 inhibition and increases risk of adverse effects; concomitant use should be avoided

● No known interactions specific to this combination. Refer to comments for this drug class in general

● Likely to interfere with metabolism and increase AUC (area under the curve) of benzodiazepines; use of PIs with benzodiazepines should be avoided due to increase risk of sedation and respiratory depression

**PATIENT
INFORMATION TO
REDUCE THE HARM**

Do Not Use With Sildenafil (Viagra) Due To Risk Of Serious Hypotension. Heart Problems, Glaucoma, or Anemia Make Poppers More Dangerous.

Avoid Benzodiazepines In Combination With Protease Inhibitors. Lower Doses May Be Necessary With Other Antiretrovirals.

GENERAL

KETAMINE (K, Special K)
Paranoia, anxiety, mania, hallucinations, "K-hole" (semicatatonic stupor)

PHARMACOKINETICS

Undergoes N-demethylation and hydroxylation (possibly mediated by CYP3A4); possible weak inhibitor of CPY2D1 and CYP3A4

NNRTI's

delavirdine (Rescriptor)
efavirenz (Sustiva)
nevirapine (Viramune)



NRTI's

abacavir (ABC,Ziagen)
Combivir (AZT/3TC)



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KNOWN DRUG INTERACTIONS

 No known interactions specific to this combination. Refer to comments for this drug class in general

 Likely increase the effect of ketamine (more sedation, increased heart rate and blood pressure). Effects last longer

 Combination may increase risk of drug induced hepatitis

LSD (Acid)

Paranoia, visual and auditory hallucinations

Extensively metabolized in the liver by hydroxylation

NNRTI's

delavirdine (Rescriptor)
efavirenz (Sustiva)
nevirapine (Viramune)



NRTI's

abacavir (ABC,Ziagen)
Combivir (AZT/3TC)



SEE INDIVIDUAL COMPONENTS

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ritonavir (Norvir)
saquinavir (Fortovase) (Invirase)



KNOWN DRUG INTERACTIONS

 No known interactions specific to this combination. Refer to comments for this drug class in general

**PATIENT
INFORMATION TO
REDUCE THE HARM**

**Decrease Your Dosage To 1/3 Or 1/2 Your Usual Dose. Wait
A Half-Hour Before Taking More. Always Use With A
Friend, Never Alone.**

Do Not Mix With Other Recreational Drugs.

GENERAL

MARIJUANA (Tetrahydrocannabinol;THC)

Tachycardia, loss of inhibitions, dry mouth, visual hallucinations

PHARMACOKINETICS

Metabolized in the liver to active metabolite (11-hydroxy THC) via CYP3A4, 2C9, and 2C6; inhibitors/inducers of CYP3A4 may interfere with THC metabolism

NNRTI's

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efavirenz (Sustiva)
nevirapine (Viramune)

NRTI's

abacavir (ABC,Ziagen)
Combivir (AZT/3TC)

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KNOWN DRUG INTERACTIONS



No known interactions specific to this combination.
Refer to comments for this drug class in general

Potential to increase THC levels

**PATIENT
INFORMATION TO
REDUCE THE HARM**

Be Aware That Smaller Amounts Of Marijuana May Lead To Increased Effects Due To Interaction With Antiretrovirals.

METHADONE

Generalized CNS depression

Primarily utilizes CYP3A4 pathway for metabolism; inhibitor of CYP2D6 and CYP3A4

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KNOWN DRUG INTERACTIONS



No known interactions specific to this combination. Refer to comments for this drug class in general

Methadone levels decreased significantly (~50%); titrate methadone dose to effect

Decreases didanosine levels ~41-60% (consider didanosine tablet form dose increase) (clinical significance unknown)

Decreases stavudine levels ~13-27% (clinical significance unknown)

Increases zidovudine levels ~40-50% (clinical significance unknown)

Potential to decrease methadone levels
May decrease methadone AUC; monitor for withdrawal and consider methadone dose increase if needed

Decreases methadone AUC ~53% (may require methadone dose increase)

May decrease methadone levels (may require methadone dose increase)

Decreases methadone ~37% (may require methadone dose increase)

Be Sure Your Health Care Provider Knows That You Take Methadone. Remind Your Provider That You Take Methadone, Particularly If You Are Changing Antiretroviral Drugs.