

## in brief

# Drug interactions

by Elizabeth Phillips & Sandra Knowles

**With over 20 antiretrovirals (ARVs) now approved or nearly approved for the treatment of HIV in Canada, the potential for drug interactions is ever increasing. Some prescription, over-the-counter (OTC), herbal and recreational drugs can interact with your ARVs and cause treatment failure.**

**M**ost ARVs are broken down by a liver enzyme called CYP3A4 that belongs to the cytochrome p450 family. Drug interactions occur when new drugs you take also interact with this enzyme. This can *increase* the effect of the drug or your ARVs (possibly resulting in toxicity and increased side effects) or *decrease* their effect, resulting in treatment failure.

The potential for drug interactions is highest with protease inhibitors (PIs).

In addition to the CYP450 system, a transporter molecule known as p-glycoprotein can result in drug interactions because it pumps some drugs out of cells. Anything that speeds up the pump (like St. John's Wort) or inhibits the pump (like ritonavir, [Norvir<sup>®</sup>]) can contribute to drug interactions.

## Empty stomach?

ARVs interact differently with food. Most nucleoside (NRTI) and non-nucleoside (NNRTI) reverse transcriptase inhibitors may be taken on a full or empty stomach. An important exception is didanosine (Videx<sup>™</sup> or Videx<sup>™</sup> EC), which must be taken on an empty stomach. It's also recommended that efavirenz (Sustiva<sup>®</sup>) not be taken with food as levels can increase as much as 80%, which can increase side effects.

Other drugs are better absorbed with some food in the stomach. Most PIs including atazanavir (Reyataz<sup>™</sup>), lopinavir/ritonavir (Kaletra<sup>®</sup>), nelfinavir (Viracept<sup>®</sup>) and saquinavir (Invirase<sup>®</sup>, Fortovase<sup>®</sup>) should be taken with a moderately fat meal.

Some ARVs, specifically atazanavir (Reyataz<sup>™</sup>) also interact with acid-suppressing agents. See the Q&A on page 13 for more information.

## Interactions with other drugs

People with HIV are living longer than ever before and aging brings about a whole new set of illnesses and potential drug interactions. Special attention must be given to drugs that could interact with PIs and NNRTIs.

Erectile dysfunction drugs (like Viagra<sup>™</sup>) and lipid lowering agents (like Lipitor<sup>™</sup>) should be used with caution or might need dose adjustment.

If you're on methadone maintenance therapy, your doctor will need to keep a close eye on your clinical signs before starting certain ARVs, especially nevirapine (Viramune<sup>®</sup>) and efavirenz (Sustiva<sup>®</sup>), otherwise you risk methadone withdrawal.

Nasal and inhaled corticosteroids for rhinitis or asthma (like Flonase<sup>®</sup>, Flovent<sup>®</sup>, Rhinocort<sup>®</sup> and Pulmicort<sup>®</sup>) can interact with ritonavir (Norvir<sup>®</sup>) leading to serious medical problems. If you've taken or been prescribed these drugs, tell your doctor and pharmacist right away.

Many drugs considered benign, like vitamins C and E, in high doses can affect CYP450 and potentially p-glycoprotein, so caution should be used when taking herbal products and vitamin supplements.

There have been overdoses and a few reports of death in people taking recreational drugs with ARVs, notably MDMA (ecstasy, 'E' or 'X') with ritonavir (Norvir<sup>®</sup>), probably because ritonavir inhibits the breakdown of ecstasy.

## Alert!

Drug interactions can result not only in adverse reactions but also treatment failure in people living with HIV. Be sure to give a complete medication history to your doctor and pharmacist and tell them ALL the prescription & over-the-counter meds, recreational drugs, vitamins and herbal products you're taking, especially when starting a new medication, so drug interactions can be anticipated and avoided. **R**



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## Web resources for drug interaction info

**In addition to your doctor and pharmacist, these websites offer up-to-date information on drug interactions between your ARVs and other drugs.**

[www.hiv-druginteractions.org](http://www.hiv-druginteractions.org)  
[www.aidsinfo.nih.gov](http://www.aidsinfo.nih.gov)

[www.hivpharmacology.com](http://www.hivpharmacology.com)  
<http://hivinsite.ucsf.edu>