



## ABACAVIR (Ziagen)

### Summary

Abacavir is a type of antiretroviral drug called a nucleoside analogue (“nuke”). The most common side effects of abacavir can include headache, nausea, vomiting, unexpected tiredness, and loss of appetite. It is usually taken at a dose of 600 mg daily, with or without food.

**Note:** Up to 8% of the people who take abacavir may have a serious allergic (“hypersensitivity”) reaction to it: please see the “Warning” section.

### What is abacavir?

**Abacavir**, sold under the brand name **Ziagen**, is a type of antiretroviral (anti-HIV) drug called a nucleoside analogue or “nuke”. Abacavir is used in combination with other antiretroviral drugs to treat (but not cure) HIV/AIDS.

### How does abacavir work?

To explain how abacavir works, we need to first tell you some information about HIV. When HIV infects a cell, it takes control of that cell. HIV then forces the cell to make many more copies of the virus. In order to make these copies, the cell uses proteins called enzymes. When the activity of these enzymes is reduced or blocked, production of HIV slows or stops.

Abacavir belongs to a class of antiretrovirals called nucleoside analogues. Abacavir interferes with an enzyme called reverse transcriptase (RT), which is used by HIV-infected cells to make new viruses. Since abacavir inhibits, or reduce the activity of this enzyme, this drug causes HIV-infected cells to produce fewer viruses.

### How do people with HIV/AIDS use abacavir?

Abacavir is used in combination with several other anti-HIV drugs, usually including drugs from different classes, such as protease inhibitors and/or non-nukes (non-nucleoside reverse transcriptase inhibitors). Combinations such as this are called highly active antiretroviral therapy, or HAART. For more information on HAART, see CATIE’s *Practical Guide to HAART for People Living with HIV/AIDS* at [www.catie.ca/PG\\_HAART\\_e.nsf](http://www.catie.ca/PG_HAART_e.nsf).

For many people with HIV/AIDS (PHAs), the use of HAART has increased their CD4+ cell counts and decreased the amount of HIV in their blood (viral load). These beneficial effects help to reduce the risk of developing a life-threatening infection. Neither abacavir nor any other anti-HIV medication is a cure for HIV/AIDS. It is therefore important that you do the following:

- see your doctor regularly so that he/she monitors your health



- continue to practice safer sex and take other precautions so as not to pass HIV on to other people

## Warnings

### 1. Hypersensitivity reaction

Up to 8% of PHAs who use abacavir experience an exaggerated immune reaction against the abacavir component of the combination. **This reaction, called abacavir hypersensitivity reaction, is very serious and can be fatal.**

Although the hypersensitivity reaction can occur at any time while a person is taking abacavir, on average it occurs within the first six weeks of use. The reaction can include the following:

- fever
- rash
- gastrointestinal symptoms (including nausea, vomiting, diarrhea, stomach pain)
- general symptoms (including unexpected lack of energy or tiredness, muscle pain, bone pain)
- respiratory symptoms (including cough, shortness of breath, sore throat)

If any of these occur while you are taking abacavir, you should stop taking this medicine immediately and contact your doctor right away.

To help diagnose hypersensitivity reactions to abacavir, the manufacturer has set up a 24-hour bilingual, toll-free information service at 1-800-868-8898. A wallet-sized warning card is included in the Ziagen packaging—it should be carried at all times by people taking this drug.

There is now a screening test to help predict whether you are likely to have an abacavir hypersensitivity reaction. See CATIE's fact sheet *Abacavir Hypersensitivity Screening*, available at [www.catie.ca/facts.nsf](http://www.catie.ca/facts.nsf).

### 2. Restarting treatment

Abacavir should never be restarted following a hypersensitivity reaction, as a fatal reaction could occur within hours. You should also never take any other drug that contains abacavir (this includes **Kivexa** and **Trizivir**).

This hypersensitivity reaction has even occurred among people who did not have any problems when they first took abacavir-containing drugs, but who then stopped and restarted.

### 3. Lactic acidosis and hepatic steatosis

Two related conditions, lactic acidosis (a buildup of lactic acid in the blood) and hepatic steatosis (excess fat in the liver), have occurred in some people who have used nucleoside analogues. These conditions can be serious or fatal. They have mostly been seen in women and people who are overweight or who have been on nucleosides a long time, and can cause the following symptoms:

- unexpected tiredness or weakness
- nausea and/or vomiting
- persistent abdominal pain
- painful inflammation of the pancreas (pancreatitis)

If any of these symptoms occur without apparent reason, call your nurse or doctor right away.

Lactic acidosis is rare (less than one case per year for every thousand patients). If you do develop any of these symptoms, it does not necessarily mean you have lactic acidosis, but you should still let your doctor know right away.

## Side effects

### 1. General

Common side effects that have been reported by some abacavir users include: headache, nausea, vomiting, unexpected tiredness, diarrhea, loss of appetite, fever, and skin rash.



Many people find that side effects caused by antiretrovirals improve or go away after the first several weeks of treatment.

## 2. Lipodystrophy syndrome

The HIV lipodystrophy syndrome is the name given to a range of symptoms that can develop over time when people use HAART regimens. Some features of the lipodystrophy syndrome include:

- loss of fat just under the skin (subcutaneous fat) in the face, arms, and legs
- bulging veins in the arms and/or legs due to the loss of fat under the skin
- increased waist and belly size
- fat pads at the back of the neck (“buffalo hump”) or at the base of the neck (“horse collar”)
- small lumps of fat in the abdomen
- increased breast size (in women)

Together with these physical changes, lab tests of your blood may detect the following:

- increased levels of fatty substances called triglycerides
- increased levels of LDL-cholesterol (low-density lipoprotein) or “bad” cholesterol
- increased levels of sugar (glucose)
- increased levels of the hormone insulin
- decreased sensitivity to insulin (insulin resistance)
- decreased levels of HDL-cholesterol (high-density lipoprotein) or “good” cholesterol

The precise causes of the HIV lipodystrophy syndrome are not clear and are difficult to understand because in some PHAs there may be one or more aspects of the syndrome taking place. For instance, some people may experience fat wasting, others fat gain, and others may experience both fat gain and wasting. What is becoming increasingly clear is that unfavourable changes in the lab readings of glucose, cholesterol, and triglycerides over a period of several years increase the risk of diabetes and cardio-

vascular disease. So far, however, the many benefits of HAART are much greater than the increased risk of cardiovascular disease or other side effects.

Maintaining a normal weight, eating a healthy diet, exercising regularly, and quitting smoking are all important in helping you to reduce your risk of diabetes, heart disease, and other complications. Regular visits to your doctor for checkups and blood tests are a vital part of staying healthy. If necessary, your doctor can prescribe lipid-lowering therapy.

Researchers are studying the lipodystrophy syndrome to try to discover ways of helping PHAs avoid or reduce this problem. To find out more about options for managing aspects of the lipodystrophy syndrome, see CATIE’s *Practical Guide to HIV Drug Side Effects* at [www.catie.ca/sideeffects\\_e.nsf](http://www.catie.ca/sideeffects_e.nsf).

Among the antiretrovirals, abacavir appears to be one of the least likely to cause or contribute to lipodystrophy.

## Drug interactions

Always consult your doctor and pharmacist about taking any other prescription or non-prescription medication, including herbs, supplements, and street drugs.

Some drugs can interact with the abacavir, increasing or decreasing its levels in your body. Increased drug levels can cause you to experience side effects or make pre-existing side effects worse. On the other hand, if drug levels become too low, HIV can develop resistance and your future treatment options may be reduced.

It may also be necessary to avoid drugs that do not affect abacavir drug levels, but cause similar side effects.

If you must take a drug that has the potential to interact with your existing medications, your doctor can do the following:

- adjust your dose of either your anti-HIV drugs or other medications
- prescribe different anti-HIV drugs for you



## Drug interactions for abacavir

The following drugs interact or have the potential to interact with the abacavir. This list is not exhaustive.

- In men, the use of alcohol in combination with abacavir causes an increase of abacavir in the blood, which could cause an increase in toxic effects. This has not been studied in women.
- Abacavir can reduce levels of methadone in the blood, which might require an adjustment to your dose of methadone.

## Resistance and cross-resistance

Over time, as new copies of HIV are made in the body, the virus changes its structure. These changes are called mutations and can cause HIV to resist the effects of anti-HIV drugs, which means those drugs will no longer work for you. Combining abacavir with at least two other anti-HIV drugs delays the development of drug resistance.

To reduce the risk of developing drug resistance, all anti-HIV drugs should be taken every day exactly as prescribed and directed. If doses are delayed, missed, or not taken as prescribed, levels of abacavir in the blood may fall too low. If this happens, resistant virus can develop. If you find you are having problems taking your medications as directed, speak to your doctor and nurse about this. They can find ways to help you.

When HIV becomes resistant to one drug in a class, it sometimes becomes resistant to other drugs in that class. This is called cross-resistance. Feel free to talk with your doctor about your current and future treatment options. To help you decide what these future therapies might be, at some point your doctor can have a small sample of your blood analysed using resistance testing. Should HIV in your body become resistant to abacavir, your doctor, with the help of resistance testing, can help put together a new treatment regimen for you.

## Dosage and formulations

**Abacavir** is available as 300 mg tablets and 20 mg/mL liquid. The usual standard adult dose of abacavir is either one tablet twice daily, or two tablets once daily, with or without food. Formulations can change, and dosages may need to be customized. All medications should always be taken as prescribed and directed.

## Availability

Abacavir is licensed in Canada for the treatment of HIV infection in adults, in combination with other anti-HIV drugs. Your doctor can tell you more about the availability and coverage of abacavir in your region. CATIE's online module *Federal, Provincial and Territorial Drug Access Programs* (on CATIE's website at [www.catie.ca/eng/Publications/drugaccess/drugaccessIndex.shtml](http://www.catie.ca/eng/Publications/drugaccess/drugaccessIndex.shtml)) also contains information about Canadian drug coverage.

**Also see CATIE's fact sheets on Kivexa, Trizivir, and abacavir hypersensitivity screening.**

## Credits

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## Disclaimer

**Decisions about particular medical treatments should always be made in consultation with a qualified medical practitioner knowledgeable about HIV-related illness and the treatments in question.**

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