

PRODUCT MONOGRAPH  
INCLUDING PATIENT MEDICATION INFORMATION

<sup>Pr</sup>**MINT-ABACAVIR**

Abacavir Tablets  
Tablets, 300 mg abacavir (as abacavir sulfate), Oral

USP  
Antiretroviral Agent

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## **PART I: HEALTH PROFESSIONAL INFORMATION**

### **1. INDICATIONS**

MINT-ABACAVIR (abacavir tablets) is indicated in antiretroviral combination therapy for the treatment of Human Immunodeficiency Virus (HIV) infection.

#### **1.1 Pediatrics**

##### **Pediatrics (> 3 months to < 18 years of age)**

MINT-ABACAVIR is indicated in pediatric patients aged 3 months and older in combination with other antiretroviral agents. The safety and efficacy of abacavir sulfate in pediatric patients less than 3 months of age have not been established; therefore, Health Canada has not authorized an indication for pediatric use in patients less than 3 months of age.

#### **1.2 Geriatrics**

##### **Geriatrics (≥ 65 years of age)**

Clinical studies of abacavir sulfate did not include sufficient numbers of patients aged 65 and older to determine whether they respond differently from younger patients. In general, dose selection for an elderly patient should be cautious, reflecting the greater frequency of decreased hepatic, renal, or cardiac function, and of concomitant disease or other drug therapy.

### **2. CONTRAINDICATIONS**

MINT-ABACAVIR tablets are contraindicated in:

- Patients who are hypersensitive to this drug or to any ingredient in the formulation or component of the container. For a complete listing, see the **6. DOSAGE FORMS, STRENGTHS, COMPOSITION AND PACKAGING** section of the product monograph.
- who are positive for the HLA-B\*5701 allele and patients with a prior history of a hypersensitivity reaction to abacavir, or products containing abacavir, regardless of HLA-B\*5701 status. Fatal hypersensitivity reactions have been associated with rechallenge of abacavir (see **7. WARNINGS AND PRECAUTIONS**).
- with moderate or severe hepatic impairment since the pharmacokinetics have not been studied in this patient group.

### 3. SERIOUS WARNINGS AND PRECAUTIONS BOX

#### Serious Warnings and Precautions

- **Fatal Hypersensitivity Reactions**

**Serious and sometimes fatal hypersensitivity reactions, with multiple organ involvement, have occurred with abacavir and abacavir-containing products.**

**Patients who carry the HLA B\*5701 allele are at a higher risk of a hypersensitivity reaction to abacavir; although, hypersensitivity reactions have occurred in patients who do not carry the HLA-B\*5701 allele (see 7. WARNINGS AND PRECAUTIONS).**

**MINT-ABACAVIR is contraindicated in patients with a prior hypersensitivity reaction to abacavir and in HLA-B\*5701-positive patients (see 2. CONTRAINDICATIONS and 7. WARNINGS AND PRECAUTIONS).**

**All patients should be screened for the HLA-B\*5701 allele prior to initiating therapy with MINT-ABACAVIR or reinitiation of therapy with MINT-ABACAVIR, unless patients have a previously documented HLA-B\*5701 allele assessment. Discontinue MINT-ABACAVIR immediately if a hypersensitivity reaction is suspected, regardless of HLA-B\*5701 status and even when other diagnoses are possible (see 2. CONTRAINDICATIONS and 7. WARNINGS AND PRECAUTIONS).**

**Following a hypersensitivity reaction to MINT-ABACAVIR, NEVER restart MINT-ABACAVIR or any other abacavir-containing product because more severe symptoms, including death can occur within hours. Similar severe reactions have also occurred rarely following the reintroduction of abacavir-containing products in patients who have no history of abacavir hypersensitivity (see 7. WARNINGS AND PRECAUTIONS).**

### 4. DOSAGE AND ADMINISTRATION

#### 4.1 Dosing Considerations

MINT-ABACAVIR can be taken with or without food.

Screening for HLA-B\*5701 Allele Prior to Initiating or Re-initiating Therapy with MINT-ABACAVIR.

All patients should be screened for the HLA-B\*5701 allele prior to initiating or re-initiating treatment with MINT-ABACAVIR, unless patients have a previously

documented HLA-B\*5701 allele assessment. (see 2. CONTRAINDICATIONS and 3. SERIOUS WARNINGS AND PRECAUTIONS BOX).

#### 4.2 Recommended Dose and Dosage Adjustment

##### Adults weighing at least 25 kg

The recommended oral dose of MINT-ABACAVIR for adults is 600 mg daily administered as either 300 mg twice daily or 600 mg once daily.

##### Adolescents and children weighing at least 25 kg

The recommended dose of MINT-ABACAVIR is 300 mg (one tablet) twice daily or 600 mg once daily (two tablets).

##### Pediatrics (≥three months of age) and weighing less than 25 kg:

The recommended oral dose of MINT-ABACAVIR for adolescents and children over 3 months of age is 8 mg/kg twice daily (up to a maximum of 300 mg twice daily) or 16 mg/kg once daily (up to a maximum of 600 mg once daily).

##### Scored Tablets

MINT-ABACAVIR is also available as a scored tablet for HIV-1-infected pediatric patients weighing greater than or equal to 14 kg for whom a solid dosage form is appropriate. Before prescribing MINT-ABACAVIR tablets, children should be assessed for the ability to swallow tablets.

The recommended oral dosage of MINT-ABACAVIR tablets for HIV-1-infected pediatric patients is presented in Table 1.

**Table 1 Dosing Recommendations for MINT-ABACAVIR Tablets in Pediatric Patients**

Weight (kg)	Once-Daily Dosing Regimen <sup>a</sup>	Twice-Daily Dosing		Total Daily Dose
		AM Dose	PM Dose	
14 to <20	1 tablet (300 mg)	½ tablet (150 mg)	½ tablet (150 mg)	300 mg
≥20 to <25	1 ½ tablets (450 mg)	½ tablet (150 mg)	1 tablet (300 mg)	450 mg
≥25	2 tablets (600 mg)	1 tablet (300 mg)	1 tablet (300 mg)	600 mg

<sup>a</sup> Data regarding the efficacy of once-daily dosing is limited to subjects who transitioned from twice-daily dosing to once-daily dosing after 36 weeks of treatment (see 14. CLINICAL TRIALS)

### **Pediatrics (< three months of age):**

The safety and efficacy of MINT-ABACAVIR in pediatric patients less than 3 months of age have not been established; therefore, Health Canada has not authorized an indication for pediatric use in patients less than 3 months of age.

### **Renal impairment**

No dosage adjustment of MINT-ABACAVIR is necessary in patients with renal dysfunction. The use of MINT-ABACAVIR 600 mg once daily has not been studied in patients with renal impairment (see **7. WARNINGS AND PRECAUTIONS, Renal Impairment**).

### **Hepatic impairment**

Abacavir is primarily metabolized by the liver. The recommended dose of MINT-ABACAVIR in patients with mild hepatic impairment (Child-Pugh Score A) who have confirmed cirrhosis is 200 mg twice a day. MINT-ABACAVIR is contraindicated in patients with moderate or severe hepatic impairment, as the pharmacokinetics have not been studied in these patient groups. (See **2. CONTRAINDICATIONS** and **7. WARNINGS AND PRECAUTIONS, Hepatic Impairment**). Pharmacokinetic and safety data on the use of abacavir in patients with moderate and severe hepatic impairment are not available. Therefore, the use of MINT-ABACAVIR is contraindicated in patients with moderate or severe hepatic impairment. Once daily Abacavir sulfate 600 mg dosing has not been studied in the patients with impaired hepatic function.

### **4.3 Missed Dose**

If the patient forgets to take their medicine, they should take it as soon as they remember. Then continue as before. Patients should not take a double dose to make up for forgotten individual doses. If a patient stops therapy with MINT-ABACAVIR because of side effects or illness, they must check with their doctor before restarting therapy to make sure that symptoms of a hypersensitivity reaction have not been missed.

## **5. OVERDOSAGE**

For management of a suspected drug overdose, please contact your regional poison control centre.

If overdosage occurs, the patient should be monitored, and standard supportive treatment applied as required.

Administration of activated charcoal may also be used to aid in the removal of unabsorbed active substance. General supportive measures are recommended.

It is not known whether abacavir can be removed by peritoneal dialysis or hemodialysis.

Limited data are available on the consequences of ingestion of acute overdoses in humans. No fatalities occurred, and the patients recovered.

Single doses up to 1,200 mg and daily doses up to 1,800 mg of abacavir sulfate have been administered to patients in clinical studies. No unexpected adverse reactions were reported. The effects of higher doses are not known. No specific signs or symptoms have been identified following such overdose.

## 6. DOSAGE FORMS, STRENGTHS, COMPOSITION AND PACKAGING

**Table 2 Dosage Forms, Strengths, Composition and Packaging**

<b>Route of Administration</b>	<b>Dosage Form / Strength</b>	<b>Nonmedicinal Ingredients</b>
Oral	Tablet / 300 mg abacavir (as abacavir sulfate)	Colloidal silicon dioxide, hydroxypropyl methylcellulose, magnesium stearate, microcrystalline cellulose, polysorbate 80, sodium starch glycolate, titanium dioxide, triacetin, and yellow iron oxide.

Each tablet of MINT-ABACAVIR contains 300 mg of abacavir (as 351.4 mg abacavir sulfate).

### **Dosage Forms**

MINT-ABACAVIR tablets, containing abacavir sulfate equivalent to 300 mg abacavir, are yellow colored, biconvex, capsule shaped film coated tablets debossed with 'H' on one side and '139' on other side separating 13 and 9 with score line.

### **Packaging**

Supplied in bottles of 60.

## 7. WARNINGS AND PRECAUTIONS

Please see the 3. SERIOUS WARNINGS AND PRECAUTIONS BOX at the beginning of Part I: Health Professional Information.

### **General**

MINT-ABACAVIR is a nucleoside analogue and should always be used in combination with other antiretroviral agents. MINT-ABACAVIR should not be administered concomitantly with other products containing abacavir, including ZIAGEN, KIVEXA, TRIZIVIR and TRIUMEQ.

Patients receiving MINT-ABACAVIR, or any other antiretroviral therapy may still develop opportunistic infections and other complications of HIV infection. Therefore,



patients should remain under close clinical observation by physicians experienced in the treatment of these associated HIV diseases.

While effective viral suppression with antiretroviral therapy has been proven to substantially reduce the risk of sexual transmission, a residual risk cannot be excluded. Precautions to prevent transmission should be taken in accordance with national guidelines.

### **Hypersensitivity Reactions**

Abacavir is associated with a risk for hypersensitivity reactions (HSR) characterized by fever and/or rash with other symptoms indicating multi-organ involvement (see **7. WARNINGS AND PRECAUTIONS**, Clinical Description of Abacavir HSRs). HSR can be life-threatening, and in rare cases fatal, when not managed appropriately. The risk for abacavir HSR to occur is significantly increased for patients who test positive for the HLA-B\*5701 allele. However, abacavir HSRs have been reported at a lower frequency in patients who do not carry this allele.

#### **Clinical Management of Abacavir HSRs**

**All patients should be screened for the HLA-B\*5701 allele prior to initiating or re-initiating treatment with MINT-ABACAVIR unless patients have a previously documented HLA-B\*5701 allele assessment**

**Do not use MINT-ABACAVIR in HLA-B\*5701-positive patients or in patients with a negative HLA-B\*5701 status who had a suspected abacavir HSR on a previous abacavir containing regimen.**

HLA-B\*5701-negative patients may develop a hypersensitivity reaction to abacavir; however, this occurs significantly less frequently than in HLA-B\*5701-positive patients.

**Regardless of HLA-B\*5701 status, permanently discontinue MINT-ABACAVIR if hypersensitivity cannot be ruled out, even when other diagnoses are possible (e.g., acute onset respiratory diseases such as pneumonia, bronchitis, pharyngitis, influenza; gastroenteritis; or reactions to other medications).**

Restarting abacavir-containing products following a suspected abacavir HSR can result in a prompt return of symptoms within hours. This recurrence is usually more severe than on initial presentation and may include life-threatening hypotension and death.

**NEVER restart MINT-ABACAVIR or any other abacavir-containing product in patients who have stopped therapy with MINT-ABACAVIR or any other abacavir-containing product due to a hypersensitivity reaction.**

When therapy with MINT-ABACAVIR has been discontinued for reasons other than symptoms of a hypersensitivity reaction, and if reinitiation of MINT-ABACAVIR is

under consideration, carefully evaluate the reason for discontinuation of **MINT-ABACAVIR** to ensure that the patient did not have symptoms of a hypersensitivity reaction.

If hypersensitivity cannot be ruled out, **DO NOT** reintroduce **MINT-ABACAVIR** or any other abacavir-containing product.

If symptoms consistent with abacavir hypersensitivity are not identified, reintroduction can be undertaken with continued monitoring for symptoms of a hypersensitivity reaction. Make patients aware that a hypersensitivity reaction can occur with reintroduction of **MINT-ABACAVIR** or any other abacavir-containing product. Reintroduction should be attempted only if the potential benefit outweighs the risk and if medical care can be readily accessed by the patient or others in case an adverse reaction occurs.

### **Clinical Description of Abacavir HSRs**

Abacavir HSR has been well characterised through clinical studies and during post marketing follow-up. Symptoms usually appeared within the first six weeks (median time to onset 11 days) of initiation of treatment with abacavir, **although these reactions may occur at any time during therapy.**

Almost all HSR to abacavir include fever and/or rash. Other signs and symptoms that have been observed as part of abacavir HSR may include respiratory and gastrointestinal symptoms, including but not limited to pharyngitis, dyspnea or cough), and gastrointestinal symptoms (including, but not limited to, nausea, vomiting, diarrhea or abdominal pain). Importantly, such symptoms **may lead to misdiagnosis of HSR as respiratory disease (pneumonia, bronchitis, pharyngitis), or gastroenteritis.** Other frequently observed signs or symptoms of HSR may include, but are not limited to, generalized malaise, fatigue or achiness (see **8. ADVERSE REACTIONS, 8.6 Description of Abacavir Hypersensitivity Adverse Reactions**). The symptoms related to this HSR worsen with continued therapy and **can be life-threatening.** These symptoms usually resolve upon discontinuation of abacavir.

A warning card with information for the patient about this hypersensitivity reaction is included in the MINT-ABACAVIR outer pack label (see a copy of this **WARNING CARD** on the last page).

### **Carcinogenesis and Mutagenesis**

Carcinogenicity studies with abacavir in mice and rats showed an increase in malignant tumours in the preputial gland of males and the clitoral gland of females of both species, and in the liver, urinary bladder, lymph nodes and subcutis of female rats. The majority of these tumours occurred at exposures equivalent to 24 to 33 times the expected systemic exposure in humans (see **16. NON-CLINICAL TOXICOLOGY, Carcinogenicity**).

Abacavir was not mutagenic in a bacterial mutagenicity assay but induced chromosomal aberrations *in vitro* and was mutagenic in the absence of metabolic activation in an L5178Y mouse lymphoma assay. In an *in vivo* mouse bone marrow micronucleus assay, abacavir was clastogenic in males at exposures ~9X higher than those in humans at the therapeutic dose (see **16. NON-CLINICAL TOXICOLOGY, Mutagenicity**).

### **Cardiovascular**

Several observational and epidemiological studies have reported an association with abacavir use and the risk of myocardial infarction. Meta-analyses of randomised controlled trials have observed no excess risk of myocardial infarction with abacavir use. To date, there is no established biological mechanism to explain a potential increase in risk. Overall, the available data from the observational studies and from controlled clinical trials show inconsistency and therefore the evidence for a causal relationship between abacavir treatment and the risk of myocardial infarction is inconclusive.

As a precaution, the underlying risk of coronary heart disease should be considered when prescribing antiretroviral therapies, including abacavir, and action taken to minimize all modifiable risk factors (e.g., hypertension, hyperlipidemia, diabetes mellitus and smoking).

### **Endocrine and Metabolism**

#### **Serum lipids and blood glucose**

Serum lipid and blood glucose levels may increase during antiretroviral therapy. Disease control and lifestyle changes may also be contributing factors. Consideration should be given to the measurement of serum lipids and blood glucose. Lipid disorders and blood glucose elevations should be managed as clinically appropriate.

### **Hepatic/Biliary/Pancreatic**

#### **Lactic Acidosis/Severe Hepatomegaly with Steatosis**

Lactic acidosis and severe hepatomegaly with steatosis, including fatal cases, have been reported with the use of nucleoside analogues either alone or in combination, including abacavir and other antiretrovirals. A majority of these cases have been in women.

Clinical features which may be indicative of the development of lactic acidosis include generalised weakness, anorexia and sudden unexplained weight loss, gastrointestinal symptoms and respiratory symptoms (dyspnea and tachypnea).

Female sex and obesity may be risk factors. Caution should be exercised when administering MINT-ABACAVIR or other nucleoside analogues, particularly to those with known risk factors for liver disease. However, cases have also been reported in patients with no known risk factors. Treatment with MINT-ABACAVIR should be

suspended in any patient who develops clinical or laboratory findings suggestive of lactic acidosis with or without hepatitis, which may include hepatomegaly and steatosis even in the absence of marked transaminase elevations.

### **Hepatic Impairment**

Abacavir is contraindicated in patients with moderate to severe hepatic impairment and dose reduction is required in patients with mild hepatic impairment.

Abacavir is metabolized primarily by the liver. The pharmacokinetics of abacavir have been studied in patients with mild hepatic impairment (Child-Pugh Score A) who had confirmed cirrhosis. The results showed that there was a mean increase of 1.89 fold in the abacavir AUC, and 1.58 fold in the half life of abacavir. The AUCs of the metabolites were not modified by the liver disease. However, the rates of formation and elimination of these were decreased. The pharmacokinetics have not been studied in patients with moderate or severe hepatic impairment; therefore MINT-ABACAVIR is contraindicated in these patient groups.

### **Immune**

#### **Immune Reconstitution Inflammatory Syndrome**

During the initial phase of treatment, patients responding to antiretroviral therapy may develop an inflammatory response to indolent or residual opportunistic infections (such as MAC, CMV, PCP and TB), which may necessitate further evaluation and treatment.

Autoimmune disorders (such as Graves' disease, polymyositis, autoimmune hepatitis and Guillain-Barre syndrome) have also been reported to occur in the setting of immune reconstitution, however the time to onset is more variable, and can occur many months after initiation of treatment and sometimes can be an atypical presentation.

### **Renal Impairment**

Preliminary data from a single dose pharmacokinetic study of MINT-ABACAVIR in 6 end-stage renal disease patients has demonstrated that abacavir concentrations were similar to those with normal renal function. The two major metabolites (5'-glucuronide and 5'carboxylate metabolites) are likely to accumulate but are considered inactive. No dosing modification of MINT-ABACAVIR is recommended in patients with renal impairment.

## **7.1 Special Populations**

### **7.1.1 Pregnant Women**

Abacavir sulfate has not been studied in pregnant women. Therefore, MINT-ABACAVIR should not be used in pregnant women unless the potential benefits outweigh the potential risk to the fetus.

There have been reports of developmental delay, seizures and other neurological disease. However, a causal relationship between these events and NRTI exposure *in utero* or peri-partum has not been established. Findings of developmental toxicity were also observed in animal toxicology studies (see **16. NON-CLINICAL TOXICOLOGY**).

There have also been reports of mild, transient elevations in serum lactate levels, which may be due to mitochondrial dysfunction, in neonates and infants exposed *in utero* or peri-partum to nucleoside reverse transcriptase inhibitors (NRTIs). The clinical relevance of transient elevations in serum lactate is unknown.

### **Antiretroviral Pregnancy Registry**

To monitor maternal-fetal outcomes of pregnant women exposed to ART (antiretroviral therapy), including MINT-ABACAVIR, an Antiretroviral Pregnancy Registry has been established. Healthcare providers are encouraged to register patients:

<http://www.apregistry.com>

Telephone: (800) 258-4263

Fax: (800) 800-1052

To date, the Antiretroviral Pregnancy Registry has received reports of over 2,000 exposures to abacavir during pregnancy resulting in live birth. These consist of over 800 exposures during the first trimester, over 1,100 exposures during the second/third trimester and included 27 and 32 birth defects respectively. The prevalence (95% CI) of defects in the first trimester was 3.1% (2.0, 4.4%) and in the second/third trimester, 2.7% (1.9, 3.9%). Among pregnant women in the reference population, the background rate of birth defects is 2.7%. There appears to be no association between abacavir and overall birth defects observed in the abacavir pregnancy registry.

### **7.1.2 Breast-feeding**

**HIV-1 infected mothers should not breast-feed their infants to avoid risking postnatal transmission of HIV.** Abacavir is secreted in human breast milk at similar concentrations as plasma levels. Because of both the potential for HIV transmission and the potential for serious adverse reactions in nursing infants, **mothers should be instructed not to breast-feed if they are receiving MINT-ABACAVIR.**

### **7.1.3 Pediatrics**

#### **Pediatrics (> 3 months)**

The safety and effectiveness of Abacavir sulfate have been established in pediatric patients aged 3 months of age.. Health Canada has not authorized an indication for use in pediatric patients less than 3 months of age.

## 7.1.4 Geriatrics

### Geriatrics (≥ 65 years of age)

Clinical studies of Abacavir sulfate did not include sufficient numbers of patients aged 65 and older to determine whether they respond differently from younger patients. In general, caution should be exercised in the administration and monitoring of MINT-ABACAVIR in elderly patients, reflecting the greater frequency of decreased hepatic, renal, or cardiac function, and of concomitant disease or other drug therapy.

## 8. ADVERSE REACTIONS

### 8.1 Adverse Drug Reaction Overview

The following adverse reactions are discussed in the **7. WARNINGS AND PRECAUTIONS** section:

- Serious and sometimes fatal hypersensitivity reaction (see Hypersensitivity Reactions)  
Lactic acidosis and severe hepatomegaly (see Lactic Acidosis and Severe Hepatomegaly with Steatosis)
- Myocardial infarction (see Cardiovascular)
- Serum lipids and blood glucose (see **Endocrine and Metabolism**)
- Immune reconstitution inflammatory syndrome (see Immune)

### 8.2 Clinical Trial Adverse Reactions

Because clinical trials are conducted under very specific conditions the adverse reaction rates observed in the clinical trials may not reflect the rates observed in practice and should not be compared to the rates in the clinical trials of another drug. Adverse drug reaction information from clinical trials is useful for identifying drug-related adverse events and for approximating rates.

The majority of the events listed below have not been treatment limiting. Care however, must be taken to eliminate the possibility of a hypersensitivity reaction if any of these symptoms occur.

#### Therapy-Naive Adults

Treatment-emergent clinical adverse reactions (rated by the investigator as moderate or severe) with a greater than or equal to 5% frequency during therapy with Abacavir sulfate 300 mg twice daily, lamivudine 150 mg twice daily, and efavirenz 600 mg

daily compared with zidovudine 300 mg twice daily, lamivudine 150 mg twice daily, and efavirenz 600 mg daily from CNA30024 are listed in Table 3.

**Table 3 Treatment-Emergent (All Causality) Adverse Reactions of at Least Moderate Intensity (Grades 2-4, >5% Frequency) in Therapy-Naive Adults (CNA30024<sup>a</sup>) Through 48 Weeks of Treatment**

Adverse Reaction	Abacavir sulfate plus Lamivudine plus Efavirenz (n = 324)	Zidovudine plus Lamivudine plus Efavirenz (n = 325)
Dreams/sleep disorders	10%	10%
Drug hypersensitivity	9%	<1% <sup>b</sup>
Headaches/migraine	7%	11%
Nausea	7%	11%
Fatigue/malaise	7%	10%
Diarrhea	7%	6%
Rashes	6%	12%
Abdominal pain/gastritis/ gastrointestinal signs and symptoms	6%	8%
Depressive disorders	6%	6%
Dizziness	6%	6%
Musculoskeletal pain	6%	5%
Bronchitis	4%	5%
Vomiting	2%	9%

<sup>a</sup> This trial used double-blind ascertainment of suspected hypersensitivity reactions. During the blinded portion of the trial, suspected hypersensitivity to abacavir was reported by investigators in 9% of 324 subjects in the abacavir group and 3% of 325 subjects in the zidovudine group.

<sup>b</sup> Ten (3%) cases of suspected drug hypersensitivity were reclassified as not being due to abacavir following unblinding.

Treatment-emergent clinical adverse reactions (rated by the investigator as moderate or severe) with a greater than or equal to 5% frequency during therapy with abacavir sulfate 300 mg twice daily, lamivudine 150 mg twice daily, and zidovudine 300 mg twice daily compared with indinavir 800 mg 3 times daily, lamivudine 150 mg twice daily, and zidovudine 300 mg twice daily from CNA3005 are listed in Table 4.

**Table 4 Treatment-Emergent (All Causality) Adverse Reactions of at Least Moderate Intensity (Grades 2-4, >5% Frequency) in Therapy-Naive Adults (CNA3005) Through 48 Weeks of Treatment**

Adverse Reaction	Abacavir sulfate plus Lamivudine/Zidovudine (n = 262)	Indinavir plus Lamivudine/Zidovudine (n = 264)
Nausea	19%	17%
Headache	13%	9%
Malaise and fatigue	12%	12%
Nausea and vomiting	10%	10%
Hypersensitivity reaction	8%	2%
Diarrhea	7%	5%
Fever and/or chills	6%	3%
Depressive disorders	6%	4%
Musculoskeletal pain	5%	7%
Skin rashes	5%	4%
Ear/nose/throat infections	5%	4%
Viral respiratory infections	5%	5%
Anxiety	5%	3%
Renal signs/symptoms	<1%	5%
Pain (non-site-specific)	<1%	5%

### **Abacavir sulfate Once Daily vs. Abacavir sulfate Twice Daily (Study CNA30021)**

Treatment emergent clinical adverse reactions (rated by the investigator as at least moderate) with a  $\geq 5\%$  frequency during therapy with abacavir sulfate 600 mg once daily or abacavir sulfate 300 mg twice daily, both in combination with lamivudine 300 mg once daily and efavirenz 600 mg once daily from Study 30021, were similar. For hypersensitivity reactions, patients receiving abacavir sulfate once daily showed a rate of 9% in comparison to a rate of 7% for patients receiving abacavir sulfate twice daily. However, patients receiving abacavir sulfate 600 mg once daily, experienced a significantly higher incidence of severe drug hypersensitivity reactions and severe diarrhea compared to patients who received abacavir sulfate 300 mg twice daily. Five percent (5%) of patients receiving abacavir sulfate 600 mg once daily had severe drug hypersensitivity reactions compared to 2% of patients receiving abacavir sulfate 300 mg twice daily. Two percent (2%) of patients receiving abacavir sulfate 600 mg once daily had severe diarrhea while none of the patients receiving abacavir sulfate 300 mg twice daily had this event.

#### **8.2.1 Clinical Trials Adverse Reactions - Pediatrics**

**Once-Daily Dosing (COL105677):** No additional safety issues were identified in pediatrics subjects (n = 669) receiving either once- or twice- daily dosing compared to adults.



### 8.3 Less common clinical trial adverse reactions

Other adverse reactions observed in clinical studies include neutropenia, anemia, thrombocytopenia, anorexia, hyperlactatemia, lactic acidosis, pancreatitis, erythema multiforme, upper abdominal pain, transient rise in liver enzymes (AST, ALT, GGT), Stevens-Johnson syndrome (SJS), toxic epidermal necrolysis (TEN).

### 8.4 Abnormal Laboratory Findings: Hematologic, Clinical Chemistry and Other Quantitative Data

Laboratory abnormalities (Grades 3-4) in therapy-naive adults during therapy with abacavir sulfate 300 mg twice daily, lamivudine 150 mg twice daily, and efavirenz 600 mg daily compared with zidovudine 300 mg twice daily, lamivudine 150 mg twice daily, and efavirenz 600 mg daily from CNA30024 are listed in Table 5.

**Table 5 Laboratory Abnormalities (Grades 3-4) in Therapy-Naive Adults (CNA30024) Through 48 Weeks of Treatment**

Grade 3/4 Laboratory Abnormalities	Abacavir sulfate plus Lamivudine plus Efavirenz (n = 324)	Zidovudine plus Lamivudine plus Efavirenz (n = 325)
Elevated CPK (>4 X ULN)	8%	8%
Elevated ALT (>5 X ULN)	6%	6%
Elevated AST (>5 X ULN)	6%	5%
Hypertriglyceridemia (>750 mg/dL)	6%	5%
Hyperamylasemia (>2 X ULN)	4%	5%
Neutropenia (ANC <750/mm <sup>3</sup> )	2%	4%
Anemia (Hgb ≤6.9 gm/dL)	<1%	2%
Thrombocytopenia (Platelets <50,000/mm <sup>3</sup> )	1%	<1%
Leukopenia (WBC ≤1,500/mm <sup>3</sup> )	<1%	2%

ULN = Upper limit of normal. n  
= Number of subjects assessed.

### 8.5 Post-Market Adverse Reactions

In addition to adverse events included from clinical trial data, the following adverse events listed below have been identified during post-approval use of abacavir.

These events have been chosen for inclusion due to either their seriousness, frequency of reporting, potential causal connection to abacavir, or a combination of these factors. Because they are reported voluntarily from a population of unknown size, estimates of frequency cannot be made.

<b>Digestive:</b>	pancreatitis
<b>Hepatic:</b>	lactic acidosis (see <b>7. WARNINGS AND PRECAUTIONS, Hepatic/Biliary/Pancreatic</b> ), <b>hepatic steatosis, hyperlactatemia.</b>
<b>Immune System:</b>	Immune Reconstitution Inflammatory Syndrome (see <b><u>7. WARNINGS AND PRECAUTIONS, Immune</u></b> )
<b>Skin:</b>	rash (without systemic symptoms), <b>erythema multiforme, Stevens-Johnson syndrome (SJS) and toxic epidermal necrolysis (TEN)</b> (primarily in combination with medications known to be associated with SJS and TEN, respectively). Because of the overlap of the clinical signs and symptoms between hypersensitivity to abacavir, SJS and TEN, and the possibility of multiple drug sensitivities in some patients, abacavir should be discontinued and not restarted in such cases.

## 8.6 Description of Abacavir Hypersensitivity Adverse Reactions

### Hypersensitivity

The signs and symptoms of abacavir hypersensitivity reaction are listed below. These have been identified either from clinical studies or post marketing surveillance. Those reported in at least 10% of patients with a hypersensitivity reaction are in **bold text**.

As described in Warnings and Precautions, almost all patients developing hypersensitivity reactions will have fever and/or rash (usually maculopapular or urticarial) as part of the syndrome, however, reactions have occurred without rash or fever. Other key symptoms include gastrointestinal, respiratory or constitutional symptoms such as lethargy and malaise.

Skin:	<b>Rash</b> (usually maculopapular or urticarial)
Gastrointestinal tract:	<b>Nausea, vomiting, diarrhoea, abdominal pain</b> , mouth ulceration
Respiratory tract:	<b>Dyspnoea, cough</b> , sore throat, adult respiratory distress syndrome, respiratory failure
Miscellaneous:	<b>Fever, fatigue, malaise</b> , oedema, lymphadenopathy, hypotension, conjunctivitis, anaphylaxis
Neurological/Psychiatry:	<b>Headache</b> , paraesthesia
Haematological:	Lymphopenia
Liver/pancreas:	<b>Elevated liver function tests</b> , hepatic failure
Musculoskeletal:	<b>Myalgia</b> , rarely myolysis, arthralgia, elevated creatine phosphokinase
Urology:	Elevated creatinine, renal failure

Restarting abacavir following an abacavir HSR results in a prompt return of symptoms within hours. This recurrence of the HSR is usually more severe than on initial presentation and may include life-threatening hypotension and death. Reactions have also occurred infrequently after restarting abacavir in patients who had only one of the key symptoms of hypersensitivity (see above) prior to stopping abacavir; and on very rare occasions have also been seen in patients who have restarted therapy with no preceding symptoms of a HSR (i.e., patients previously considered to be abacavir tolerant).

For details of clinical management in the event of a suspected abacavir HSR (see **7. WARNINGS AND PRECAUTIONS**, Clinical Management of Abacavir HSRs).

## **9. DRUG INTERACTIONS**

### **9.1 Overview**

*In vitro* studies have shown that abacavir inhibits cytochrome P450 1A1 (CYP1A1) and shows limited potential to inhibit metabolism mediated by the CYP3A4 enzyme. It has also been shown *in vitro* not to interact with drugs that are metabolized by CYP2C9 or CYP2D6 enzymes. Clinical studies have shown that there are no clinically significant interactions between abacavir sulfate, zidovudine, and lamivudine.

#### **Effect of Abacavir on the Pharmacokinetics of Other Agents**

*In vitro*, abacavir has been shown to inhibit CYP1A1, and to a limited degree CYP3A4. When coadministered with abacavir or abacavir-containing fixed dose combination drugs, exposures to drugs that are substrates of CYP1A1 could increase.

*In vitro*, abacavir demonstrates no or weak inhibition of the drug transporters organic anion transporter 1B1 (OATP1B1), OATP1B3, breast cancer resistance protein (BCRP) or P-glycoprotein (Pgp) and minimal inhibition of organic cation transporter 1 (OCT1), OCT2 and multidrug and toxin extrusion protein 2-K (MATE2-K). Abacavir is therefore not expected to affect the plasma concentrations of drugs that are substrates of these drug transporters.

Abacavir is an inhibitor of MATE1 *in vitro*, however abacavir has low potential to affect the plasma concentrations of MATE1 substrates at therapeutic drug exposures (up to 600 mg).

#### **Effect of Other Agents on the Pharmacokinetics of Abacavir**

*In vitro*, abacavir is not a substrate of OATP1B1, OATP1B3, OCT1, OCT2, OAT1, MATE1, MATE2-K, Multidrug resistance-associated protein 2 (MRP2) or MRP4, therefore drugs that modulate these transporters are not expected to affect abacavir plasma concentrations.

Although abacavir is a substrate of BCRP and Pgp *in vitro*, clinical studies demonstrate no clinically significant changes in abacavir pharmacokinetics when co-administered with lopinavir/ritonavir (Pgp and BCRP inhibitors).

## 9.2 Drug-Drug Interactions

No drug interaction studies have been conducted with abacavir sulfate. The drugs listed in the following table are based on either drug interaction case reports or studies, or potential interactions due to the expected magnitude and seriousness of the interaction (i.e. those identified as contraindicated).

**Table 6**      **Established or Potential Drug-Drug Interactions**

Proper name	Effect	Clinical comment
Ethanol	In men, the metabolism of abacavir sulfate is altered by concomitant ethanol resulting in an increase in AUC of abacavir of about 41%.	The clinical significance of this is unknown. In men, abacavir sulfate has no effect on the metabolism of ethanol. This interaction has not been studied in women.
Methadone	In a pharmacokinetic study, coadministration of 600 mg abacavir twice daily with methadone showed a 35% reduction in abacavir $C_{max}$ and a one hour delay in $t_{max}$ , but AUC was unchanged	The changes in abacavir pharmacokinetics are not considered clinically relevant. In this study, abacavir increased the mean methadone systemic clearance by 22%. This change is not considered clinically relevant for the majority of patients; however occasionally methadone dose retitration may be required.
Retinoids		Retinoid compounds, such as isotretinoin, are eliminated via alcohol dehydrogenase. Interaction with abacavir is possible but has not been studied.
Riociguat	In vitro, abacavir inhibits CYP1A1. Coadministration of a single dose of riociguat (0.5 mg) to HIV-1–infected subjects receiving TRIUMEQ (abacavir/dolutegravir/lamivudine 600mg/50mg/300mg once daily) resulted in approximately 3-fold higher riociguat AUC(0-∞) compared with historical riociguat AUC(0-∞) reported in healthy subjects.	Abacavir sulfate and ADEMPAS (riociguat) should be co-administered with caution. Riociguat dose may need to be reduced, consult the riociguat product labeling for dosing recommendations.

### 9.3 Drug-Food Interactions

Abacavir sulfate can be taken with or without food (see **10. CLINICAL PHARMACOLOGY**).

### 9.4 Drug-Herb Interactions

Interactions with herbs have not been established.

### 9.5 Drug-Laboratory Test Interactions

Interactions with laboratory tests have not been established.

## 10. CLINICAL PHARMACOLOGY

### 10.1 Mechanism of Action

Abacavir is a carbocyclic synthetic nucleoside analogue of deoxyguanosine-5'triphosphate. Abacavir is metabolized by intracellular kinases to its triphosphate (TP), which is the active moiety carbovir triphosphate (CBV-TP). CBV-TP is a substrate for and competitive inhibitor of HIV reverse transcriptase (RT). Inhibition of RT is via viral DNA chain termination after nucleoside analogue incorporation. CBV-TP shows significantly less affinity for host cell DNA polymerases and is a weak inhibitor of mammalian  $\alpha$ ,  $\beta$  and  $\gamma$ -DNA polymerases. Abacavir is a nucleoside reverse transcriptase inhibitor (NRTI), and is a potent, selective inhibitor of HIV-1 and HIV-2, including HIV-1 isolates with reduced susceptibility to zidovudine, lamivudine, zalcitabine, didanosine and nevirapine. *In vitro* studies have demonstrated that its mechanism of action in relation to HIV is inhibition of the HIV reverse transcriptase enzyme, an event which results in chain termination and interruption of the viral replication cycle. The antiviral activity of abacavir in cell culture was not antagonized when combined with the nucleoside reverse transcriptase inhibitors (NRTIs) didanosine, emtricitabine, lamivudine, stavudine, tenofovir, zalcitabine or zidovudine, the non-nucleoside reverse transcriptase inhibitor (NNRTI) nevirapine, or the protease inhibitor (PI) amprenavir.

### 10.2 Pharmacokinetics

#### Pharmacokinetics in Adults

The pharmacokinetic properties of abacavir sulfate have been studied in asymptomatic, HIV-infected adult patients after administration of a single intravenous (IV) dose of 150 mg and after single and multiple oral doses. The pharmacokinetic properties of abacavir sulfate were independent of dose over the range of 300 to 1,200 mg/day.

Abacavir sulfate is rapidly and well absorbed following oral administration. The absolute bioavailability of oral abacavir sulfate in adults is about 83%. Following oral administration, the mean time ( $t_{max}$ ) to maximal serum concentrations of abacavir is about 1.5 hours for the tablet formulation. At 300 mg twice daily, the steady state  $C_{max}$  of

abacavir sulfate tablets is approximately 3 µg/ml, and the AUC over a dosing interval of 12 hours is approximately 6 µg.h/ml.

Food delayed absorption and decreased  $C_{max}$  but did not affect overall plasma concentrations (AUC). Therefore, abacavir sulfate can be taken with or without food.

In a study of 20 HIV-infected patients receiving abacavir 300 mg twice daily, with only one 300 mg dose taken prior to the 24 h sampling period, the geometric mean terminal carbovir-TP intracellular half-life at steady-state was 20.6 h, compared to the geometric mean abacavir plasma half-life in this study of 2.6 h. The steady state pharmacokinetic properties of abacavir 600 mg once daily was compared to abacavir 300 mg twice daily in a crossover study in 27 HIV-infected patients. Intracellular carbovir triphosphate exposures in peripheral blood mononuclear cells were higher for abacavir 600 mg once daily with respect to  $AUC_{24,ss}$  (32 %, higher),  $C_{max 24,ss}$  (99% higher) and trough values (18% higher), compared to the 300 mg twice daily regimen. These data support the use of abacavir 600 mg once daily for the treatment of HIV-infected patients. Additionally, the efficacy and safety of this combination given once daily has been demonstrated in a pivotal clinical study (see **14. CLINICAL TRIALS**).

### **Absorption and Bioavailability**

Abacavir sulfate was rapidly and extensively absorbed after oral administration. Absolute bioavailability of the tablet was  $86\% \pm 25\%$  (mean  $\pm$  SD). After oral administration of 300 mg twice daily in 20 patients, the steady-state peak serum abacavir concentration ( $C_{max}$ ) was  $3.0 \pm 0.89$  mcg/mL (mean  $\pm$  SD) and  $AUC_{(0-12 \text{ hours})}$  was  $6.02 \pm 1.73$  mcg•h/mL. After oral administration of a single dose of 600 mg of abacavir in 20 patients,  $C_{max}$  was  $4.26 \pm 1.19$  mcg/mL (mean  $\pm$  SD) and  $AUC_{\infty}$  was  $11.95 \pm 2.51$  mcg•h/mL. Bioavailability of abacavir sulfate tablets was assessed in the fasting and fed states (standard meal; 967 kcal, 67 grams fat, 33 grams protein, 58 grams carbohydrate). Food decreased  $C_{max}$  by 35% and delayed  $T_{max}$  by 0.5 hours to 1.5 hours. However, there was no significant difference in systemic exposure ( $AUC_{\infty}$ ) in the fed and fasted states; therefore, MINT-ABACAVIR tablets may be administered with or without food.

### **Distribution**

Following intravenous administration, the apparent volume of distribution was about 0.8 L/ kg, indicating that abacavir penetrates freely into body tissues.

Studies in HIV-infected patients have shown good penetration of abacavir into the cerebrospinal fluid (CSF), with a CSF to plasma AUC ratio of between 30 to 44%. In a Phase I pharmacokinetic study, the penetration of abacavir into the CSF was investigated following administration of abacavir 300 mg twice a day.

The mean concentration of abacavir achieved in the CSF 1.5 hours post dose was 0.14 mcg/mL. In a further pharmacokinetic study of 600 mg twice a day, the CSF concentration of abacavir increased over time, from approximately 0.13 mcg/mL at 0.5

to 1 hour after dosing, to approximately 0.74 mcg/mL after 3 to 4 hours. While peak concentrations may not have been attained by 4 hours, the observed values are 9-fold greater than the IC<sub>50</sub> of abacavir of 0.08 mcg/mL or 0.26 mcM. However, no effect on neuropsychological performance was seen when administered to patients with AIDS Dementia Complex.

Plasma protein binding studies *in vitro* indicate that abacavir binds only low to moderately (~49%) to human plasma proteins at therapeutic concentrations. This indicates a low likelihood for drug interactions through plasma protein binding displacement.

### **Metabolism**

Abacavir is primarily metabolized by the liver with less than 2% of the administered dose being renally excreted as unchanged compound. The primary pathways of metabolism in humans are by alcohol dehydrogenase and by glucuronidation to produce the 5'-carboxylic acid and 5'-glucuronide which account for about 66% of the administered dose. These metabolites are excreted in the urine. The metabolites do not have antiviral activity. *In vitro* experiments reveal that abacavir had weak inhibition of human CYP3A4, CYP2D6, or CYP2C9 activity at clinically relevant concentrations. In humans, abacavir is not significantly metabolized by cytochrome P<sub>450</sub> enzymes.

### **Elimination**

The mean half life of abacavir is about 1.5 hours. Following multiple oral doses of abacavir 300 mg twice a day, there is no significant accumulation of abacavir. Elimination of abacavir is via hepatic metabolism with subsequent excretion of metabolites primarily in the urine. The metabolites and unchanged abacavir account for about 83% of the administered abacavir dose in the urine. The remainder is eliminated in the feces.

### **Special Populations and Conditions**

#### ***Pediatrics:***

Abacavir is rapidly and well absorbed from oral solution and tablet formulations when administered to children. Plasma abacavir exposure has been shown to be the same for both formulations when administered at the same dose. Children receiving abacavir oral solution according to the recommended dosage regimen achieve plasma abacavir exposure similar to adults. Children receiving abacavir oral tablets according to the recommended dosage regimen achieve higher plasma abacavir exposure than children receiving oral solution because higher mg/kg doses are administered with the tablet formulation (see 10. CLINICAL PHARMACOLOGY, Special Populations and Conditions, **Pediatric Patients**). Pediatric pharmacokinetic studies have demonstrated that once daily dosing provides equivalent AUC<sub>0-24</sub> to twice daily dosing of the same total daily dose for both oral solution and tablet formulations. The recommended dose for children over 3 months of age is 8 mg/kg twice daily or 16 mg/kg once daily. There are

insufficient safety data to recommend the use of abacavir sulfate in infants less than three months old.

***Patients with Impaired Hepatic Function:***

Abacavir is metabolised primarily by the liver. The pharmacokinetics of abacavir have been studied in patients with mild hepatic impairment (Child-Pugh Score A) who had confirmed cirrhosis.

The results showed that there was a mean increase of 1.89-fold in the abacavir AUC, and 1.58 fold in the half life of abacavir. The AUCs of the metabolites were not modified by the liver disease. However, the rates of formation and elimination of these were decreased. Dosage reduction of abacavir is required in patients with mild hepatic impairment. The pharmacokinetics of abacavir have not been studied in patients with moderate or severe hepatic impairment.

***Patients with Impaired Renal Function:***

Abacavir is primarily metabolized by the liver, with approximately 2% of abacavir excreted unchanged in the urine. The pharmacokinetics of abacavir in patients with end stage renal disease is similar to patients with normal renal function. Therefore, no dosage reduction is required in patients with renal impairment.

## **11. STORAGE, STABILITY AND DISPOSAL**

### **Tablets**

MINT-ABACAVIR tablets should be stored between 15°C and 30°C.

## **12. SPECIAL HANDLING INSTRUCTIONS**

Not applicable.



## PART II: SCIENTIFIC INFORMATION

### 13. PHARMACEUTICAL INFORMATION

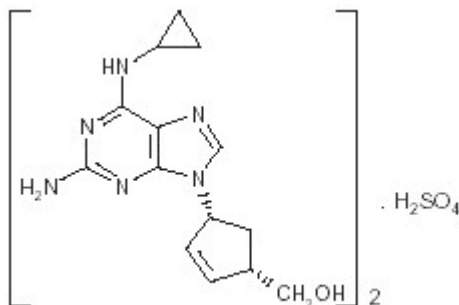
#### Drug Substance

Proper name: abacavir sulfate

Chemical name (USP): 2-Cyclopentene-1-methanol, 4-[2-amino-6-(cyclopropyl-amino)-9H-purin-9-yl]-, (1S-cis)-, sulfate (salt) (2:1)

Molecular formula and molecular mass:  $(C_{14}H_{18}N_6O)_2 \cdot H_2SO_4$ , 670.74 g/mol

Structural formula:



Physicochemical properties:

Description: Abacavir sulfate is a white to off-white powder with a melting point around  $224 \pm 3^\circ\text{C}$  followed by decomposition.

pKa value by Potentiometry by using 0.1N NaOH: 5.55

## 14. CLINICAL TRIALS

### 14.1 Trial Design and Study Demographics

#### **Therapy-naive adults**

CNA3005 was a multi-centre, double-blind study in which 562 HIV-1 infected, therapy naive adults were randomized to receive either abacavir sulfate (300 mg twice daily) and COMBIVIR (lamivudine, 150 mg and zidovudine, 300 mg twice daily) or indinavir (800 mg three times daily) and COMBIVIR (twice daily) for 48 weeks. All subjects were required to adhere to the TID regimen and food/water restrictions. Study participants were predominantly male (87%) and White (73%). The median age was 35.7 years, the median pretreatment CD4 cell count was 360 cells/mm<sup>3</sup>, and median plasma HIV-1 RNA was 4.83 log<sub>10</sub> copies/mL.

In a multi-centre, double-blind controlled study (CNA30021), 770 HIV-infected adults were randomized to receive either abacavir 600 mg once daily or 300 mg twice daily, both in combination with lamivudine 300 mg once daily and efavirenz 600 mg once daily. Patients were stratified at baseline based on plasma HIV-RNA  $\leq$  100,000 copies/mL or  $>$  100,000 copies/mL. The duration of double-blind treatment was at least 48 weeks. The results are summarized in Table 7 below.

#### **Treatment-Naive Pediatric Patients**

ARROW (COL105677) was a 5-year randomized, multicenter trial which compared a regimen of once-daily dosing with twice-daily dosing of abacavir sulfate/ lamivudine in HIV-1 infected pediatric patients. There were 1,206 patients enrolled aged 3 months to 17 years.

Patients were dosed according to the weight-band based dosing recommended by the World Health Organization treatment guidelines. After 36 weeks on treatment, 669 patients receiving abacavir sulfate/ lamivudine twice daily were randomized to either twice daily or once-daily dosing through an additional 96 weeks. The proportions of subjects with viral loads of  $<$ 80 copies/mL remained similar through 96 weeks (Table 7) following randomization for the 2 groups.

#### **Treatment-Experienced Pediatric Patients**

In a study comparing the unblinded NRTI combinations (with or without blinded nelfinavir) in children, a greater proportion treated with abacavir and lamivudine (71%) or abacavir and zidovudine (60%) had HIV-1 RNA  $\leq$  400 copies/mL at 48 weeks, compared with those treated with lamivudine and zidovudine (47%) [p=0.09, intention to treat analysis].

## 14.2 Study Results

### Therapy-naïve adults

#### CNA3005

Over 48 weeks, treatment of naive adult patients, with the combination of abacavir, lamivudine and zidovudine showed a similar antiviral effect to the combination with indinavir, lamivudine and zidovudine when 400 copies/mL was the threshold used.

In subjects with baseline viral load greater than 100,000 copies/mL, percentages of subjects with HIV-1 RNA levels less than 50 copies/mL were 31% in the group receiving abacavir versus 45% in the group receiving indinavir.

#### CNA30021

**Table 7 - Virological Response Based in Plasma HIV-1 RNA < 50 copies/mL at Week 48 ITT-Exposed Population**

Populations	abacavir once/day +3TC+EFV (N=384)	abacavir twice/day +3TC+EFV (N=386)
<b>Sub-group by baseline RNA</b>		
≤ 100,000 copies/mL	141/217 (65%)	145/217 (67%)
> 100,000 copies/mL	112/167 (67%)	116/169 (69%)
<b>Total population</b>	<b>253/384 (66%)</b>	<b>261/386 (68%)</b>

The abacavir once-daily arm was demonstrated to be non-inferior when compared to the twice daily group in the overall and baseline viral load sub-groups.

### Treatment-Naïve Pediatric Patients – ARROW

**Table 8 - Proportions of Responders by HIV-1 RNA Copies Through 96 Weeks (From Randomization to Once-Daily or Twice-Daily Dosing - Snapshot Analysis)**

	Abacavir sulfate/ lamivudine Twice Daily Dosing n = 333 N (%)	Abacavir sulfate/ lamivudine Once Daily Dosing n= 336 N (%)
Week 0 (After ≥36 Weeks on Treatment)		
Virological Response (<80 copies/mL)	250 (75)	237 (71)
Risk difference	-4.5% (95% CI -11.3% to +2.2%)	
Week 48		
Virological Response (<80 copies/mL)	242 (73)	233 (69)

	Abacavir sulfate/ lamivudine Twice Daily Dosing n = 333 N (%)	Abacavir sulfate/ lamivudine Once Daily Dosing n= 336 N (%)
Risk difference	-3.3% (95% CI -10.2% to + 3.5%)	
Week 96		
Virological Response (<80 copies/mL)	232 (70)	226 (67)
Risk difference	-2.4% (95% CI -9.4% to +4.6%)	

The abacavir sulfate/ lamivudine once daily dosing group was demonstrated to be non-inferior to the twice daily group according to the pre-specified non-inferiority margin of -12% at Week 48 and Week 96 (<200c/mL, <400c/mL, <1000c/mL). Virologic outcomes between treatment arms were comparable across baseline characteristics (gender, age, or viral load at randomization).

### Treatment-Experienced Pediatric Patients

Greater proportions of children treated with the abacavir- containing combinations had HIV-1 RNA  $\leq$  50 copies/mL at 48 weeks (53%, 42% and 28% respectively, p=0.07).

### 14.3 Comparative Bioavailability Studies

A double blinded, randomized, single-dose (1 x 300 mg), two-treatment, two-sequence, two-period, crossover oral bioequivalence study of MINT-ABACAVIR 300 mg Tablets and PrZiagen® 300 mg tablets was conducted in healthy, Asian, adult male volunteers under fasting conditions. A summary of the results from the 28 subjects who completed the study is presented in the following table.

#### SUMMARY TABLE OF THE COMPARATIVE BIOAVAILABILITY DATA

<b>Abacavir</b> <b>(1 x 300 mg)</b> <b>From measured data</b>  <b>Geometric Mean</b> <b>Arithmetic Mean (CV%)</b>				
Parameter	Test*	Reference†	% Ratio of Geometric Means	90% Confidence Interval
<b>AUC<sub>T</sub></b> <b>(ng·hr/mL)</b>	7434.7 7689.4 (26.6)	7442.7 7634.5 (22.6)	99.9	94.0 - 106.1
<b>AUC<sub>∞</sub></b> <b>(ng·hr/mL)</b>	7540.3 7793.6 (26.3)	7528.2 7718.1 (22.4)	100.2	94.4 - 106.3

Abacavir				
(1 x 300 mg)				
From measured data				
Geometric Mean				
Arithmetic Mean (CV%)				
Parameter	Test*	Reference <sup>†</sup>	% Ratio of Geometric Means	90% Confidence Interval
<b>C<sub>max</sub></b> <b>(ng/mL)</b>	3716.8 3934.3 (37.4)	3689.5 3994.0 (40.0)	100.7	88.9 - 114.2
<b>T<sub>max</sub><sup>§</sup></b> (hr)	0.4 (0.2 - 2.0)	0.5 (0.2 - 2.0)		
<b>T<sub>1/2</sub><sup>@</sup></b> (hr)	1.5 (38.1)	1.4 (13.2)		
*Mint-Abacavir (Abacavir sulfate) 300 mg tablets (Mint Pharmaceuticals Inc.) <sup>†</sup> PrZiagen <sup>®</sup> (Abacavir sulfate) 300mg tablets (ViiV Healthcare ULC) were purchased in Canada <sup>§</sup> Expressed as the median (range) only <sup>@</sup> Expressed as the arithmetic mean (CV%) only				

## 15. MICROBIOLOGY

### In Vitro Activity

The *in vitro* anti-HIV-1 activity of abacavir was evaluated against a T-cell tropic laboratory strain HIV-1 IIIB in lymphoblastic cell lines, a monocyte/macrophage tropic laboratory strain HIV-1 BaL in primary monocytes/macrophages, and clinical isolates in peripheral blood mononuclear cells. The concentration of drug necessary to inhibit viral replication by 50 percent (IC<sub>50</sub>) ranged from 3.7 to 5.8 mcM against HIV-1 IIIB, and was 0.26 ± 0.18 mcM (1mcM = 0.28 mcg/mL) against eight clinical isolates. The IC<sub>50</sub> of abacavir against HIV-1 BaL varied from 0.07 to 1.0mcM. The antiviral activity of abacavir in cell culture was not antagonized when combined with the nucleoside reverse transcriptase inhibitors (NRTIs) didanosine, emtricitabine, lamivudine, stavudine, tenofovir, zalcitabine or zidovudine, the non-nucleoside reverse transcriptase inhibitor (NNRTI) nevirapine, or the protease inhibitor (PI) amprenavir. Ribavirin (50µM) had no effect on the anti-HIV 1 activity of abacavir in cell culture.

### Drug Resistance

Abacavir resistant isolates of HIV-1 have been selected *in vitro* and are associated with specific genotypic changes in the reverse transcriptase (RT) codon region (codons M184V, K65R, L74V, and Y115F). Viral resistance to abacavir develops relatively slowly *in vitro* and *in vivo*, requiring multiple mutations to reach an eight-fold increase in IC<sub>50</sub> over wild type virus, which may be a clinically relevant level. The mutations selected by *in vitro* passage have also been observed among isolates obtained from patients participating in clinical trials, with L74V and M184V being the most common. Combination therapy with abacavir sulfate and zidovudine delays the emergence of

mutations associated with resistance to abacavir sulfate compared with monotherapy with abacavir sulfate.

Phenotypic analysis of HIV-1 isolates that harbour abacavir-associated mutations from 17 patients after 12 weeks of abacavir monotherapy exhibited a 3-fold decrease in susceptibility to abacavir *in vitro*. The clinical relevance of genotypic and phenotypic changes associated with abacavir therapy has not been established.

### **Cross-resistance**

Reduced susceptibility to abacavir has been demonstrated in clinical isolates of patients with uncontrolled viral replication, who have been pre-treated with and are resistant to other nucleoside inhibitors (except lamivudine and emtricitabine). Cross resistance conferred by the M184V RT is limited within the nucleoside inhibitor class of antiretroviral agents. Zidovudine, stavudine, abacavir and tenofovir maintain their antiretroviral activities against lamivudine-resistant HIV-1 harbouring only the M184V mutation. Clinical isolates with three or more mutations associated with NRTIs are unlikely to be susceptible to abacavir.

*In vitro*, isolates resistant to abacavir might also show reduced sensitivity to lamivudine, zalcitabine, tenofovir, emtricitabine and/or didanosine, but remain sensitive to zidovudine and stavudine.

### **Observed During Clinical Trial:**

A once-daily regimen of abacavir was investigated in a multi-centre, double-blind, controlled study, (CNA30021) of 770 HIV infected, therapy-naive adults. They were randomized to receive either abacavir 600 mg once daily or 300 mg twice daily, both in combination with lamivudine 300 mg once daily and efavirenz 600 mg once daily. Patients were stratified at baseline based on plasma HIV-1 RNA  $\leq$  100,000 copies/mL or  $>$  100,000 copies/mL. The duration of the double-blind treatment was at least 48 weeks.

Genotypic analysis was attempted for all subjects with virologic failure (confirmed HIV RNA  $>$  50 copies/mL). There was a low overall incidence of virologic failure in both the once and twice daily treatment groups (10% and 8% respectively). Additionally, for technical reasons, genotyping was restricted to samples with plasma HIV-RNA  $>$  500 copies/mL. These factors resulted in a small sample size. Therefore, no firm conclusions could be drawn regarding differences in treatment emergent mutations between the two treatment groups. Reverse transcriptase amino acid residue 184 was consistently the most frequent position for NRTI resistance-associated mutations (M184V or M184I). The second most frequent mutation was L74V. Mutations Y115F and K65R were uncommon.

## 16. NON-CLINICAL TOXICOLOGY

### Acute Toxicity

Single oral or intravenous dose acute toxicity studies in the mouse and rat revealed no significant effects. The maximum non-lethal oral dose of abacavir in the mouse and rat was at least 100 and 115 fold greater, respectively, than the maximum intended therapeutic dose in humans of 300 mg b.i.d. (12 mg (base)/kg/day for a 50 kg person).

### Long-term toxicity

Repeated oral administration of abacavir succinate to mice at 330 mg/kg/day for up to 6 months, and to monkeys at 300 mg/kg/day for up to 52 weeks, or abacavir sulfate to rats at 530 mg/kg/day for up to 3 months, resulted in few changes which were mostly reversible.

The only consistent findings in rodents and monkeys were changes in the liver. Increases in liver weights seemed to be dose-related in the monkey. Slight increases in serum alanine aminotransferase and triglycerides were also observed in monkeys. Microscopically, slight centrilobular hepatocellular hypertrophy was seen in these animal species. In high dose monkeys, slightly swollen mitochondria, a decrease in the amount of rough endoplasmic reticulum and an increase in the number of lysosomes were observed using electron microscopy. Occasional individual cell necrosis, pigment deposits in centrilobular hepatocyte and Kupffer cells were seen in mice and rats. Additional changes observed in toxicity studies included slight alterations in cholesterol, albumin and/or total protein in mice and/or rats and transient reductions in hematology parameters in monkeys. Clinical observations of toxicity (including emesis, hunched posture, hypoactivity, decreased appetite, and abnormal feces) occurred in monkeys administered high doses of abacavir daily for 12 months.

### Carcinogenicity

Carcinogenicity studies with orally administered abacavir in mice and rats showed an increase in the incidence of malignant and non-malignant tumours. Malignant tumours occurred in the preputial gland of males and the clitoral gland of females of both species, and in the liver, urinary bladder, lymph nodes and the subcutis of female rats.

The majority of these tumours occurred at the highest abacavir dose of 330 mg/kg/day in mice and 600 mg/kg/day in rats. These dose levels were equivalent to 24 to 32 times the expected systemic exposure in humans. The exception was the preputial gland tumour which occurred at a dose of 110 mg/kg. This is equivalent to six times the expected human systemic exposure. There is no structural counterpart for this gland in humans.

Reductions in survival and body weight in rats at 600 mg/kg/day resulted in the early discontinuation of dosing in Weeks 84 (males) and 100 (females). Survival in mice was also reduced at 330 mg/kg/day, resulting in the early discontinuation of dosing of males in Week 98.

While the carcinogenic potential in humans is unknown, these data suggest that a carcinogenic risk to humans is outweighed by the potential clinical benefit.

Mild myocardial degeneration in the heart of mice and rats was observed following administration of abacavir for two years. The systemic exposures were equivalent to 7 to 24 times the expected systemic exposure in humans. The clinical relevance of this finding has not been determined.

### **Mutagenicity**

In an *in vitro* cytogenetic study performed in human lymphocytes, abacavir induced chromosomal aberrations following exposure at 2,800 and 3,200 mcg/mL for 3 hours in the presence of metabolic activation and after exposure at 100 and 125 mcg/mL for 50.3 hours in the absence of metabolic activation. The abacavir concentrations at which evidence of genotoxicity was seen *in vitro* were at least 33 times higher than the expected maximum human blood level.

In an *in vitro* mouse bone marrow micronucleus test, there was a small (2.3-fold) increase in the number of micronucleated polychromatic erythrocytes in males at 1,000 mg/kg. No significant increase was seen in bone marrow harvested from females. Findings in the micronucleus test were seen at systemic exposures (in terms of AUC) approximately nine times higher than exposure in humans at the therapeutic dose, and  $C_{max}$  values approximately 14 times higher than the maximum concentration in humans at the therapeutic dose.

No evidence of mutagenicity (with or without metabolic activation) was observed in bacterial mutagenicity assays at concentrations up to approximately 5,000 mcg/plate. In a mutagenicity assay conducted in L5178Y mouse lymphoma cells, abacavir was weakly mutagenic following exposure at 250 mcg/mL for 24 hours in the absence of metabolic activation. Abacavir was not mutagenic to L5178Y mouse lymphoma cells in a 3-hour exposure in the presence or absence of metabolic activation.

### **Reproduction and Teratology**

Abacavir had no adverse effects on the mating performance or fertility of male and female rats at doses of up to 500 mg/kg per day.

Reproduction studies were performed in rats and rabbits at orally administered doses up to 1,000 mg/kg per day and 700 mg/kg per day, respectively. These doses in rats and rabbits achieved approximately 35 and 8.5 times, respectively, the exposure associated with the recommended human dose. In the rat, development toxicity (depressed fetal body weight and reduced crown-rump length) and increased incidences of fetal anasarca and skeletal malformations were observed at the highest dose assessed. Studies in pregnant rats showed that abacavir is transferred to the fetus through the placenta. In a fertility study, evidence of toxicity to the developing embryo and fetuses (increased



resorptions, decreased fetal body weights) occurred only at 500 mg/kg per day, a dose that was toxic to the parental generation. This dose in rats achieved approximately 33 times the exposure with the usual human dose. In the rabbit, there was no evidence of drug-related developmental toxicity and no increases in fetal malformations, at doses up to 700 mg/kg (8.5 times the human exposure at the recommended dose, based on AUC). The offspring of female rats treated with abacavir at 500 mg/kg (beginning at embryo implantation and ending at weaning) showed increased incidence of stillbirth and lower body weights throughout life.

## **17. SUPPORTING PRODUCT MONOGRAPHS**

ZIAGEN<sup>®</sup> (tablets, 300 mg; oral solution, 20 mg/ml), submission control no. 243476, Product Monograph, ViiV Healthcare ULC. (January 20, 2021)

## PATIENT MEDICATION INFORMATION

### READ THIS FOR SAFE AND EFFECTIVE USE OF YOUR MEDICINE

**Pr MINT-ABACAVIR  
abacavir tablets**

Read this carefully before you start taking MIN-ABACAVIR and each time you get a refill. This leaflet is a summary and will not tell you everything about this drug. Talk to your healthcare professional about your medical condition and treatment and ask if there is any new information about MINT-ABACAVIR.

#### **Serious Warnings and Precautions**

##### **Hypersensitivity Reaction**

**Serious and sometimes fatal hypersensitivity reactions (serious allergic reactions) have happened in people taking MINT-ABACAVIR and other medicines containing abacavir.** You should be screened for the HLA-B\*5701 gene variation prior to starting or re-starting treatment with MINT-ABACAVIR, unless you have been screened previously and this is documented. Patients who have the HLA-B\*5701 gene variation have a high risk of developing a hypersensitivity reaction to abacavir, which is the medicinal ingredient in MINT-ABACAVIR. This hypersensitivity reaction **can be life threatening** if you continue to take MINT-ABACAVIR. Do not take MINT-ABACAVIR if you have the HLA-B\*5701 gene variation or have had a reaction in the past to MINT-ABACAVIR or any other medicine containing abacavir (such as TRIZIVIR (no longer marketed in Canada), KIVEXA or RIUMEQ).

**If you stop MINT-ABACAVIR because of a hypersensitivity reaction, never take MINT-ABACAVIR or any other medicine containing abacavir again, regardless of whether you have the HLAB\* 5701 gene variation or not. If you restart MINT-ABACAVIR or any other medicine containing abacavir, within hours you may experience a life-threatening lowering of your blood pressure or death.**

If you stop MINT-ABACAVIR for any other reason, even for a few days, and you are not allergic to MIN-ABACAVIR, talk with your healthcare professional before taking it again. Taking MINT-ABACAVIR again may cause a serious allergic or life-threatening reaction, even if you never had an allergic reaction to it before.

#### **Important Information on Hypersensitivity Reactions**

If you get two or more of the following groups of symptoms while taking MINT-ABACAVIR contact your doctor immediately to find out if you should stop taking MINT-ABACAVIR:

	SYMPTOM(S)
<b>Group 1</b>	<b>Fever</b>

	SYMPTOM(S)
<b>Group 2</b>	<b>Rash</b>
<b>Group 3</b>	<b>Nausea, vomiting, diarrhea, or abdominal (stomach area) pain</b>
<b>Group 4</b>	<b>Generally ill feeling, extreme tiredness or achiness</b>
<b>Group 5</b>	<b>Shortness of breath, cough or sore throat</b>

A list of these symptoms is on the Warning Card provided by your pharmacist. You should carry this Warning Card with you at all times. **If you notice these symptoms while taking MINT-ABACAVIR, call your doctor immediately. Your doctor may advise you to stop taking MINT-ABACAVIR.**

**If your healthcare provider tells you that you can take MINT-ABACAVIR, again, start taking it when you are around medical help or people who can call a doctor if you need one.**

Occasionally, reactions have developed in people who start taking abacavir again and had only one symptom on the Warning Card before they stopped taking it.

If you are hypersensitive to MINT-ABACAVIR, return all your unused MINT-ABACAVIR tablets for safe disposal. Ask your doctor or pharmacist for advice.

#### **What is MINT-ABACAVIR used for?**

MINT-ABACAVIR is a medicine used with other antiretrovirals to treat Human Immunodeficiency Virus (HIV) infection.

#### **How does MINT-ABACAVIR work?**

MINT-ABACAVIR contains the medicinal ingredient abacavir sulfate. This belongs to a group of antiretroviral medicines called nucleoside analogue reverse transcriptase inhibitors (NRTIs), which are used to treat HIV infection.

HIV is a retrovirus (a type of virus). Infection with HIV damages the immune system and can lead to Acquired Immune Deficiency Syndrome (AIDS) and other related illnesses.

MINT-ABACAVIR does not cure HIV infection; it reduces the amount of virus in your body and keeps it at a low level. It also increases the CD4 cell count in your blood. CD4 cells are a type of white blood cells that are important in helping your body fight infection.

#### **What are the ingredients in MINT-ABACAVIR?**

Medicinal ingredients: 300 mg abacavir (as abacavir sulfate)

Non-medicinal ingredients: colloidal silicon dioxide, hydroxypropyl methylcellulose, magnesium stearate, microcrystalline cellulose, polysorbate 80, sodium starch glycolate, titanium dioxide, triacetin, and yellow iron oxide.

**MINT-ABACAVIR comes in the following dosage forms:**

300 mg tablets

Do not use MINT-ABACAVIR if you:

- previously had an allergic reaction (hypersensitivity) to the medicinal ingredient abacavir, which is also included in medicines called ZIAGEN, KIVEXA, TRIUMEQ and TRIZIVIR (no longer marketed in Canada), or to any of the other ingredients found in MINT-ABACAVIR.
- have the HLA-B\* 5701 gene variation.
- have moderate or severe liver disease.

**To help avoid side effects and ensure proper use, talk to your healthcare professional before you take MINT-ABACAVIR. Talk about any health conditions or problems you may have, including if you:**

- have liver problems
- have been tested and know whether or not you have a gene variation called HLAB\*5701
- are already taking a medicine that contains abacavir, including KIVEXA or TRIUMEQ.
- or the person you are caring for is less than 3 months of age or 65 years of age or older

**Other warnings you should know about:**

**MINT-ABACAVIR can cause serious side effects, including:**

- **Lactic Acidosis and Severe Liver Problems:** The class of medicines to which MINT-ABACAVIR belongs (NRTIs) can cause a condition called lactic acidosis (excess of lactic acid in your blood), together with an enlarged liver. Symptoms of lactic acidosis include feeling of weakness, loss of appetite, sudden unexplained weight loss, upset stomach and difficulty breathing or rapid breathing. This rare, but serious side effect occurs more often in women. If you have liver problems, you may also be more at risk of getting this condition.
- **Heart Attack:** Some HIV medicines including MINT-ABACAVIR may increase your risk of heart attack. If you have heart problems, smoke or suffer from diseases that increase your risk of heart disease such as high blood pressure and diabetes, tell your healthcare professional.
- **Risk of Infections:** You may continue to develop other infections and other illnesses associated with HIV while you are taking MINT-ABACAVIR. You should therefore keep in regular contact with your healthcare professional.
- **Immune Reconstitution Inflammatory Syndrome:** Changes to your immune system can happen when you start taking HIV-1 medicines. Your immune system may get stronger and begin to fight infections that have been hidden in your body for a long time.

Autoimmune disorders (when the immune system attacks healthy body tissue) may also occur after you start taking medicines for HIV infection. Examples of this include: Grave's disease (which affects the thyroid gland), Guillain-Barré syndrome (which affects the nervous system), polymyositis (which affects the muscles), or autoimmune hepatitis (which affects the liver). Autoimmune disorders may occur many months after the start of treatment.

See the Serious side effects and what to do about them table, below, for more information on these and other serious side effects.

**Blood Tests:** Your blood sugar levels (glucose) or level of fats (lipids) in your blood may increase with HIV treatment. Your healthcare professional will decide when to do blood tests, to check for these and other side effects, and will interpret the results.

**Pregnancy and Newborns:** If you are pregnant, or planning to become pregnant, talk to your healthcare professional before taking MINT-ABACAVIR. It is not known if MINT-ABACAVIR is safe to use during pregnancy. Your healthcare professional will decide whether you should continue to take MINT-ABACAVIR if you are pregnant. If you are pregnant and taking MINT-ABACAVIR to prevent passing HIV to your unborn baby continue to follow your healthcare professionals' recommendations. If you have questions about the risks to your baby talk to your healthcare professional. If you take MINT-ABACAVIR while you are pregnant, talk to your healthcare professional about how you can be included in the Antiretroviral Pregnancy Registry.

Babies born to mothers who have taken Nucleoside Reverse Transcriptase Inhibitors (NRTIs) like MINT-ABACAVIR during pregnancy or labor have had increased levels of lactate in their blood. The increases are usually temporary. There have also been very rare reports of problems that affect the baby's nervous system such as delayed development and seizures. The long-term effects of abacavir are not known.

**Breastfeeding:** Do not breastfeed while taking MINT-ABACAVIR. There is a risk of passing HIV-1 to your baby if you breastfeed. MINT-ABACAVIR can also be passed through breast milk and could harm your baby. If you are breastfeeding or planning to breastfeed, talk with your healthcare professional about the best way to feed your baby.

**Infecting Others with HIV:** MINT-ABACAVIR will not stop you from passing HIV to others, although this risk is lower if you take your HIV medicine as instructed by your healthcare professional. You should take steps to avoid infecting others by:

- Using condoms when you have oral or penetrative sex.
- Not reusing or sharing needles, syringes, or other injection equipment.

**Tell your healthcare professional about all the medicines you take, including any drugs, vitamins, minerals, natural supplements or alternative medicines.**

**The following may interact with MINT-ABACAVIR:**

- Methadone, to treat pain and drug addiction
- Retinoids, to treat skin conditions
- Riociguat, to treat high blood pressure
- Alcohol

Talk to your healthcare professional for further advice if you are taking any of these medicines. For some of these medicines, your healthcare professional may need to adjust the dose of one of your medicines in order for it to work properly.

**How to take MINT-ABACAVIR:**

- Take MINT-ABACAVIR exactly as directed by your healthcare professional. If you are unsure about how to take it, ask your doctor or pharmacist.
- You can take MINT-ABACAVIR with or without food.
- MINT-ABACAVIR is always prescribed with other antiretroviral agents.
- If you have liver problems your healthcare professional may have to adjust your dose.
- MINT-ABACAVIR tablets can be given to children and adults able to swallow tablets.

**Usual dose:**

**Adults, Adolescents and Children (weighing at least 25 kg):** 600 mg daily.

- **Tablets:** 1 tablet (300 mg) twice daily **or** 2 tablets (600 mg) once daily

**Adolescents and Children (≥ 3 months of age and weighing less than 25 kg):** The dose of MINT-ABACAVIR tablets will be decided by your healthcare professional based on your child’s weight.

**Overdose:**

If you think you, or a person you are caring for, have taken too much MINT-ABACAVIR, contact your healthcare professional, hospital emergency department or regional poison control centre immediately, even if there are no symptoms.

**Missed Dose:**

It is important to take this medicine as prescribed to ensure you get maximum benefit. If you forget to take a dose, take it as soon as you remember, and then continue as before. Do not take a double dose to make up for forgotten individual doses.

**If you stopped taking MINT-ABACAVIR:**

If you stop taking MINT-ABACAVIR because of side effects or illness, you must contact your doctor before restarting to make sure that symptoms of a hypersensitivity reaction have not been missed. In some cases, your healthcare professional will ask you to restart MINT-ABACAVIR under direct medical supervision or in a place where you will be able to get ready access to medical care if needed.

**What are possible side effects from using MINT-ABACAVIR?**

These are not all the possible side effects you may feel when taking MINT-ABACAVIR. If you experience any side effects not listed here, contact your healthcare professional.

Like all medicines, MINT-ABACAVIR can have side effects. When treating HIV infection, it is not always possible to tell whether some of the side effects that occur are caused by MINT-ABACAVIR, by other medicines you are taking at the same time or by the HIV infection. For this reason, it is very important that you inform your healthcare professional about any changes in your health.

Side effects may include:

- nausea (feeling sick), vomiting
- diarrhea
- loss of appetite
- lack of energy, fatigue
- fever
- headache
- rash

<b>Serious side effects and what to do about them</b>			
Symptom / effect	Talk to your healthcare professional		Stop taking drug and get immediate medical help
	Only if severe	In all cases	
<b>COMMON</b>			
<b>Hypersensitivity Reaction/Serious Allergic Reaction</b> , which can present as skin rash and/or symptoms from at least 2 of the following groups: -fever -shortness of breath, sore throat or cough -nausea or vomiting, diarrhea, or stomach pain -severe tiredness or achiness, or generally feeling ill.		√	
<b>RARE</b>			
<b>Lactic Acidosis (high level of acid in the blood) and Liver Problems:</b> weight loss, fatigue, malaise, abdominal pain, shortness of breath, swollen and enlarged liver with symptoms of liver problems such as nausea, vomiting, abdominal pain, weakness and diarrhea		√	

<b>Serious side effects and what to do about them</b>			
Symptom / effect	Talk to your healthcare professional		Stop taking drug and get immediate medical help
	Only if severe	In all cases	
<b>Pancreatitis (inflammation of the pancreas): abdominal pain that lasts and gets worse when you lie down, nausea, vomiting</b>		√	
<b>VERY RARE</b>			
<b>Serious Skin Reactions [erythema multiforme, Stevens-Johnson syndrome (SJS) and toxic epidermal necrolysis (TEN)]:</b> severe rash, itching, fever, swollen lymph nodes, flu-like feeling, blisters and peeling of skin that may start in and around the mouth, nose, eyes and genitals and spread to other areas of the body			√
<b>FREQUENCY NOT KNOWN</b>			
<b>Immune Reconstitution Inflammatory Syndrome and Autoimmune Disorders:</b> fever, redness, rash or swelling, fatigue, joint or muscle pain, numbness or weakness beginning in the hands and feet and moving up towards the trunk of the body, palpitations, chest pain or rapid heart rate, yellowing of the eyes and skin		√	
<b>Heart Attack:</b> chest pain or discomfort, pain in the jaw, neck or back or pain radiating down the left arm, shortness of breath, nausea, dizziness		√	

If you have a troublesome symptom or side effect that is not listed here or becomes bad enough to interfere with your daily activities, talk to your healthcare professional.



## Reporting Side Effects

You can report any suspected side effects associated with the use of health products to Health Canada by:

- Visiting the Web page on Adverse Reaction Reporting (<https://www.canada.ca/en/health-canada/services/drugs-health-products/medeffect-canada/adverse-reaction-reporting.html>) for information on how to report online, by mail or by fax; or
- Calling toll-free at 1-866-234-2345.

*NOTE: Contact your health professional if you need information about how to manage your side effects. The Canada Vigilance Program does not provide medical advice.*

## Storage:

Store MINT-ABACAVIR tablets between 15 and 30°C.

Keep out of the reach and sight of children.

Do not take your medicine after the expiry date shown on the bottle and/or the carton.

## If you want more information about MINT-ABACAVIR:

- Talk to your healthcare professional
- Find the full product monograph that is prepared for healthcare professionals and includes this Patient Medication Information by visiting the Health Canada website (<https://www.canada.ca/en/health-canada/services/drugs-health-products/drug-products/drug-product-database.html>); the manufacturer's website ([www.mintpharmaceuticals.com](http://www.mintpharmaceuticals.com)), or by calling 1-877-398-9696.

This leaflet was prepared by Mint Pharmaceuticals Inc.

Last Revised November 18, 2021

**INFORMATION FOR PRESCRIBERS:**

A copy of the warning card included with the MINT-ABACAVIR carton is shown below.

<b>WARNING CARD</b>	
<b>MINT-ABACAVIR</b> <b>abacavir tablets</b>	
<p>Patients taking MINT-ABACAVIR (abacavir sulfate) may develop a hypersensitivity reaction (a serious allergic reaction) which can be life-threatening if you continue to take MINT-ABACAVIR. <b>If you notice two or more of the following sets of symptoms while taking MINT-ABACAVIR, contact your doctor immediately to find out if you should stop taking MINT-ABACAVIR.</b></p>	
	<b>SYMPTOM(S)</b>
<b>Group 1</b>	<b>Fever</b>
<b>Group 2</b>	<b>Rash</b>
<b>Group 3</b>	<b>Nausea, vomiting, diarrhea, or abdominal (stomach area) pain</b>
<b>Group 4</b>	<b>Generally ill feeling, extreme tiredness or achiness</b>
<b>Group 5</b>	<b>Shortness of breath, cough or sore throat</b>
<p>If you have already had this reaction to <b>MINT-ABACAVIR</b>, <b>never take any medicine containing abacavir, such as ZIAGEN (abacavir sulfate), KIVEXA (abacavir sulfate/lamivudine), or TRIUMEQ (dolutegravir/abacavir/lamivudine) again. If you take any medicine containing abacavir, such as MINT-ABACAVIR, ZIAGEN, KIVEXA, or TRIUMEQ again, within hours you may experience a life-threatening lowering of your blood pressure or death.</b></p>	
<p><b>Carry this card with you at all times.</b></p>	
<p>You should return all of your unused MINT-ABACAVIR to your doctor or pharmacist for proper disposal.</p>	
<p>Questions or concerns? <b>Mint Pharmaceuticals Inc.</b> Mississauga, Ontario L5T 2M3 <a href="http://www.mintpharmaceuticals.com">www.mintpharmaceuticals.com</a> 1-877-398-9696</p>	