

protease inhibitors was continued or reintroduced if treatment had been discontinued. A causal relationship between protease inhibitors and these events has not been established.

Lipid Elevations

Treatment with APTIVUS co-administered with 200 mg of ritonavir has resulted in large increases in the concentration of total cholesterol and triglycerides (see **ADVERSE REACTIONS, Table 11**). Triglyceride and cholesterol testing should be performed prior to initiating APTIVUS/ritonavir therapy and at periodic intervals during therapy. Lipid disorders should be managed as clinically appropriate (see **PRECAUTIONS, Drug Interactions, Table 9: Established and Other Potentially Significant Drug Interactions** for additional information on potential drug interactions with APTIVUS/ritonavir and HMG-CoA reductase inhibitors).

Fat Redistribution

Redistribution/accumulation of body fat including central obesity, dorsocervical fat enlargement (buffalo hump), peripheral wasting, facial wasting, breast enlargement, and “cushingoid appearance” have been observed in patients receiving antiretroviral therapy. The mechanism and long-term consequences of these events are currently unknown. A causal relationship has not been established.

Immune Reconstitution Syndrome

Immune reconstitution syndrome has been reported in patients treated with combination antiretroviral therapy, including tipranavir. During the initial phase of combination antiretroviral treatment, patients whose immune system responds may develop an inflammatory response to indolent or residual opportunistic infections (such as *Mycobacterium avium* infection, cytomegalovirus, *Pneumocystis jirovecii* pneumonia, tuberculosis, or reactivation of herpes simplex and herpes zoster), which may necessitate further evaluation and treatment.

Information for Patients

Patients should be informed that APTIVUS co-administered with 200 mg of ritonavir, has been associated with severe liver disease, including some deaths. Patients with signs or symptoms of clinical hepatitis should discontinue APTIVUS/ritonavir treatment and seek medical evaluation. Symptoms of hepatitis include fatigue, malaise, anorexia, nausea, jaundice, bilirubinuria, acholic stools, liver tenderness or hepatomegaly. Extra vigilance is needed for patients with chronic hepatitis B or C co-infection, as these patients have an increased risk of hepatotoxicity.

Liver function tests should be performed prior to initiating therapy with tipranavir and 200 mg of ritonavir, and frequently throughout the duration of treatment. Patients with chronic hepatitis B or C co-infection or elevations in liver enzymes prior to treatment are at increased risk (approximately 2.5-fold) for developing further liver enzyme elevations or severe liver disease. Caution should be exercised when administering APTIVUS/ritonavir to patients with liver enzyme abnormalities or history of chronic liver disease. Increased liver function testing is warranted in these patients. APTIVUS should not be given to patients with moderate to severe liver disease.

Mild to moderate rash has been reported in HIV-infected men and women receiving APTIVUS/ritonavir.

Women receiving estrogen-based hormonal contraceptives should be instructed that additional or alternative contraceptive measures should be used during therapy with APTIVUS/ritonavir. There may be an increased risk of rash when APTIVUS is given with hormonal contraceptives.

Patients should be informed that redistribution or accumulation of body fat may occur in patients receiving antiretroviral therapy and that the cause and long-term health effects of these conditions are not known at this time.

Patients should be informed that APTIVUS must be co-administered with 200 mg ritonavir to ensure its therapeutic effect. Failure to correctly co-administer APTIVUS with ritonavir will result in reduced plasma levels of tipranavir that may be insufficient to achieve the desired antiviral effect.

Patients should be told that sustained decreases in plasma HIV-1 RNA have been associated with a reduced risk of progression to AIDS and death. Patients should remain under the care of a physician while using APTIVUS. Patients should be advised to take APTIVUS and other concomitant antiretroviral therapy every day as prescribed. APTIVUS, co-administered with ritonavir, must be given in combination with other antiretroviral drugs. Patients should not alter the dose or discontinue therapy without consulting with their doctor. If a dose of APTIVUS is missed, patients should take the dose as soon as possible and then return to their normal schedule. However, if a dose is skipped the patient should not double the next dose.

Patients should be informed that APTIVUS is not a cure for HIV-1 infection and that they may continue to develop opportunistic infections and other complications associated with HIV disease. The long-term effects of APTIVUS are unknown at this time. Patients should be told that there are currently no data demonstrating that therapy with APTIVUS can reduce the risk of transmitting HIV to others through sexual contact.

APTIVUS may interact with some drugs; therefore, patients should be advised to report to their health care provider the use of any other prescription, non-prescription medication or herbal products, particularly St. John's wort.

APTIVUS should be taken with food to enhance absorption.

The Patient Package Insert provides written information for the patients, and should be dispensed with each new prescription and refill.

Drug Interactions

Tipranavir administered with ritonavir can alter plasma exposure of other drugs and other drugs can alter plasma exposure of tipranavir and ritonavir.

Tipranavir co-administered with 200 mg of ritonavir at the recommended dosage is a net inhibitor of CYP 3A and may increase plasma concentrations of agents that are primarily metabolized by CYP 3A. Thus, co-administration of tipranavir/ritonavir with drugs highly dependent on CYP 3A for clearance and for which elevated plasma concentrations are associated with serious and/or life-threatening events should be contraindicated. Co-administration with other CYP 3A substrates may require a dose adjustment or additional monitoring (see **CONTRAINDICATIONS** and **PRECAUTIONS**).

The mechanisms of the potential interactions are described in the **CLINICAL PHARMACOLOGY, Drug Interactions** section.

Drugs that are contraindicated or not recommended for co-administration with APTIVUS are included in Table 8 below. These recommendations are based on either drug interaction studies or they are predicted interactions due to the expected magnitude of interaction and potential for serious events or loss of efficacy.

**Table 8 Drugs that Should Not be Co-administered with APTIVUS
Co-administered with 200 mg of Ritonavir**

Drug Class/Drug Name	Clinical Comment
Antiarrhythmics Amiodarone, bepridil, flecainide, propafenone, quinidine	CONTRAINDICATED due to potential for serious and/or life-threatening reactions such as cardiac arrhythmias secondary to increases in plasma concentrations of antiarrhythmics.
Antihistamines Astemizole, terfenadine	CONTRAINDICATED due to potential for serious and/or life-threatening reactions such as cardiac arrhythmias.
Antimycobacterials Rifampin	May lead to loss of virologic response and possible resistance to tipranavir or to the class of protease inhibitors.
Ergot derivatives Dihydroergotamine, ergonovine, ergotamine, methylegonovine	CONTRAINDICATED due to potential for serious and/or life-threatening reactions such as acute ergot toxicity characterized by peripheral vasospasm and ischemia of the extremities and other tissues.
GI motility agents Cisapride	CONTRAINDICATED due to potential for serious and/or life-threatening reactions such as cardiac arrhythmias.
Herbal products St. John's wort	May lead to loss of virologic response and possible resistance to tipranavir or to the class of protease inhibitors.
HMG CoA reductase inhibitors Lovastatin, simvastatin	Potential for serious reactions such as risk of myopathy including rhabdomyolysis.
Neuroleptics Pimozide	CONTRAINDICATED due to potential for serious and/or life-threatening reactions such as cardiac arrhythmias.
Sedatives/hypnotics Midazolam, triazolam	CONTRAINDICATED due to potential for serious and/or life-threatening reactions such as prolonged or increased sedation or respiratory depression.

Clinically significant drug-drug interactions of APTIVUS co-administered with 200 mg of ritonavir are summarized in the Table 9 below.

Table 9 Established and Other Potentially Significant Drug Interactions: Alterations in Dose or Regimen May be Recommended Based on Drug Interaction Studies or Predicted Interaction

Concomitant Drug Class: Drug name	Effect on Concentration of Tipranavir or Concomitant Drug	Clinical Comment
HIV-Antiviral Agents		
Nucleoside reverse transcriptase inhibitors:		
Abacavir	↓ Abacavir AUC by approximately 40%	Clinical relevance of reduction in abacavir levels not established. Dose adjustment of abacavir cannot be recommended at this time.
Didanosine (EC)	↓ Didanosine	Clinical relevance of reduction in didanosine levels not established. For optimal absorption, didanosine should be separated from TPV/ritonavir dosing by at least 2 hours.
Zidovudine	↓ Zidovudine AUC by approximately 35%. ZDV glucuronide concentrations were unaltered.	Clinical relevance of reduction in zidovudine levels not established. Dose adjustment of zidovudine cannot be recommended at this time.
Protease inhibitors (co-administered with 200 mg of ritonavir):		
Amprenavir Lopinavir Saquinavir	↓ Amprenavir, ↓ Lopinavir, ↓ Saquinavir	Combining amprenavir, lopinavir or saquinavir with APTIVUS/ritonavir is not recommended. No formal drug interaction data are currently available for the concomitant use of APTIVUS, co-administered with 200 mg of ritonavir, with protease inhibitors other than those listed above.
Other Agents for Opportunistic Infections		
Antifungals:		
Fluconazole Itraconazole Ketoconazole Voriconazole	↑ Tipranavir, ↔ Fluconazole ↑ Itraconazole (not studied) ↑ Ketoconazole (not studied) ↓ Voriconazole (not studied)	Fluconazole increases TPV concentrations but dose adjustments are not needed. Fluconazole doses > 200 mg/day are not recommended. Based on theoretical considerations itraconazole and ketoconazole should be used with caution. High doses (200 mg/day) are not recommended. Due to multiple enzymes involved with voriconazole metabolism, it is difficult to predict the interaction.

**Table 9 Established and Other Potentially Significant Drug Interactions:
Alterations in Dose or Regimen May be Recommended Based on Drug
Interaction Studies or Predicted Interaction (continued)**

Concomitant Drug Class: Drug name	Effect on Concentration of Tipranavir or Concomitant Drug	Clinical Comment
Other Agents for Opportunistic Infections		
Antimycobacterials:		
Clarithromycin	↑ Tipranavir, ↑ Clarithromycin, ↓ 14-hydroxy-clarithromycin metabolite	No dose adjustment of tipranavir or clarithromycin for patients with normal renal function is necessary. For patients with renal impairment the following dosage adjustments should be considered: <ul style="list-style-type: none"> • For patients with CL_{CR} 30 to 60 mL/min the dose of clarithromycin should be reduced by 50%. For patients with CL _{CR} < 30 mL/min the dose of clarithromycin should be decreased by 75%.
Rifabutin	Tipranavir not changed, ↑Rifabutin ↑ Desacetyl-rifabutin	Single dose study. Dosage reductions of rifabutin by 75% are recommended (e.g. 150 mg every other day). Increased monitoring for adverse events in patients receiving the combination is warranted. Further dosage reduction may be necessary.
Other Agents Commonly used		
Calcium Channel Blockers:	Combination with TPV/ritonavir not studied. Cannot predict effect of TPV/ritonavir on calcium channel blockers that are dual substrates of CYP 3A and P-gp due to conflicting effect of TPV/ritonavir on CYP 3A and P-gp.	Caution is warranted and clinical monitoring of patients is recommended.
Diltiazem Felodipine Nicardipine Nisoldipine Verapamil	<ul style="list-style-type: none"> ↓ Diltiazem ↑ Felodipine (CYP 3A substrate but not P-gp substrate) ↓ Nicardipine ↓ Nisoldipine (CYP 3A substrate but not clear whether it is a P-gp substrate) ↓ Verapamil 	
Despiramine	Combination with TPV/ritonavir not studied ↑ Despiramine	Dosage reduction and concentration monitoring of despiramine is recommended.

Table 9 Established and Other Potentially Significant Drug Interactions: Alterations in Dose or Regimen May be Recommended Based on Drug Interaction Studies or Predicted Interaction (continued)

Disulfiram/Metronidazole	Combination with TPV/ritonavir not studied	APTIVUS capsules contain alcohol that can produce disulfiram-like reactions when co-administered with disulfiram or other drugs which produce this reaction (e.g. metronidazole).
HMG-CoA reductase inhibitors:		Start with the lowest possible dose of atorvastatin with careful monitoring, or consider other HMG-CoA reductase inhibitors. Concomitant use of APTIVUS, co-administered with 200 mg of ritonavir, with lovastatin or simvastatin is not recommended.
Atorvastatin	↑ Tipranavir, ↑ Atorvastatin ↓ Hydroxy-atorvastatin metabolites	
Hypoglycemics:		Careful glucose monitoring is warranted.
Glimepiride Glipizide Glyburide Pioglitazone Repaglinide Tolbutamide	Combination with TPV/ritonavir not studied. ↓ Glimepiride (CYP 2C9) ↓ Glipizide (CYP 2C9) ↓ Glyburide (CYP 2C9) ↓ Pioglitazone (CYP 2C8 and CYP 3A4) ↓ Repaglinide (CYP 2C8 and CYP 3A4) ↓ Tolbutamide (CYP 2C9) The effect of TPV/ritonavir on CYP 2C8 and CYP 2C9 substrates is not known.	
Immunosuppressants:		More frequent concentration monitoring of these medicinal products is recommended until blood levels have been stabilized.
Cyclosporine Sirolimus Tacrolimus	Combination with TPV/ritonavir not studied. Cannot predict effect of TPV/ritonavir on immunosuppressants due to conflicting effect of TPV/ritonavir on CYP 3A and P-gp. ↓ Cyclosporine ↓ Sirolimus ↓ Tacrolimus	
Narcotic analgesics:		
Meperidine	Combinations with TPV/ritonavir not studied ↓ Meperidine, ↑ Normeperidine	Dosage increase and long-term use of meperidine are not recommended due to increased concentrations of the metabolite normeperidine which has both analgesic activity and CNS stimulant activity (e.g. seizures).
Methadone	↓ Methadone by 50%	Dosage of methadone may need to be increased when co-administered with tipranavir and 200 mg of ritonavir.

**Table 9 Established and Other Potentially Significant Drug Interactions:
Alterations in Dose or Regimen May be Recommended Based on Drug
Interaction Studies or Predicted Interaction (continued)**

Oral contraceptives/Estrogens:		Alternative methods of nonhormonal contraception should be used when estrogen based oral contraceptives are co-administered with tipranavir and 200 mg of ritonavir. Patients using estrogens as hormone replacement therapy should be clinically monitored for signs of estrogen deficiency. Women using estrogens may have an increased risk of non serious rash.
Ethinyl estradiol	↓ Ethinyl estradiol concentrations by 50%	
PDE5 inhibitors:		Concomitant use of PDE5 inhibitors with tipranavir and ritonavir should be used with caution and in no case should the starting dose of: <ul style="list-style-type: none"> • sildenafil exceed 25 mg within 48 hours • tadalafil exceed 10 mg every 72 hours • vardenafil exceed 2.5 mg every 72 hours
	Combinations with TPV/ritonavir not studied.	
Sildenafil	↑ Sildenafil	
Tadalafil	↑ Tadalafil	
Vardenafil	↑ Vardenafil	
Selective Serotonin-Reuptake Inhibitors:		Antidepressants have a wide therapeutic index, but doses may need to be adjusted upon initiation of APTIVUS/ritonavir therapy.
	Combination with TPV/ritonavir not studied	
Fluoxetine	↑ Fluoxetine	
Paroxetine	↑ Paroxetine	
Sertraline	↑ Sertraline	
Warfarin	Combination with TPV/ritonavir not studied. Cannot predict the effect of TPV/ritonavir on S-Warfarin due to conflicting effect of TPV and RTV on CYP 2C9	Frequent INR (international normalized ratio) monitoring upon initiation of tipranavir/ritonavir therapy.

Carcinogenesis, Mutagenesis, Impairment of Fertility

Long term animal carcinogenicity bioassays with tipranavir and tipranavir/ritonavir are currently in progress. However, tipranavir showed no evidence of mutagenicity or clastogenicity in a battery of five *in vitro* and *in vivo* tests including the Ames bacterial reverse mutation assay using *S. typhimurium* and *E. coli*, unscheduled DNA synthesis in rat hepatocytes, induction of gene mutation in Chinese hamster ovary cells, a chromosome aberration assay in human peripheral lymphocytes, and a micronucleus assay in mice.

Tipranavir had no effect on fertility or early embryonic development in rats at dose levels up to 1000 mg/Kg/day, equivalent to a C_{max} of 258 μ M in females. Based on C_{max} levels in these rats, as well as an exposure (AUC) of 1670 μ M·h in pregnant rats from another study, this exposure was

approximately equivalent to the anticipated exposure in humans at the recommended dose level of 500/200 mg tipranavir/ritonavir BID.

Pregnancy

Teratogenic Effects, Pregnancy Category C.

Investigation of fertility and early embryonic development with tipranavir disodium was performed in rats, teratogenicity studies were performed in rats and rabbits, and pre- and post-natal development were explored in rats.

No teratogenicity was detected in reproductive studies performed in pregnant rats and rabbits up to dose levels of 1000 mg/Kg/day and 150 mg/Kg/day tipranavir, respectively, at exposure levels approximately 1.1-fold and 0.1-fold human exposure. At 400 mg/Kg/day and above in rats, fetal toxicity (decreased sternebrae ossification and body weights) was observed, corresponding to an AUC of 1310 $\mu\text{M}\cdot\text{h}$ or approximately 0.8-fold human exposure at the recommended dose. In rats and rabbits, fetal toxicity was not noted at 40 mg/Kg/day and 150 mg/Kg/day, respectively, corresponding accordingly to C_{max} /AUC_{0-24h} levels of 30.4 μM /340 $\mu\text{M}\cdot\text{h}$ and 8.4 μM /120 $\mu\text{M}\cdot\text{h}$. These exposure levels (AUC) are approximately 0.2-fold and 0.1-fold the exposure in humans at the recommended dose.

In pre- and post-development studies in rats, tipranavir showed no adverse effects at 40 mg/Kg/day (~0.2-fold human exposure), but caused growth inhibition in pups and maternal toxicity at dose levels of 400 mg/Kg/day (~0.8-fold human exposure). No post-weaning functions were affected at any dose level.

There are no adequate and well-controlled studies in pregnant women for the treatment of HIV-1 infection. APTIVUS should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus.

Antiretroviral Pregnancy Registry

To monitor maternal-fetal outcomes of pregnant women exposed to APTIVUS, an Antiretroviral Pregnancy Registry has been established. Physicians are encouraged to register patients by calling (800) 258-4263.

Nursing Mothers

The Centers for Disease Control and Prevention recommend that HIV-infected mothers not breastfeed their infants to avoid risking postnatal transmission of HIV. Because of both the potential for HIV transmission and any possible adverse effects of tipranavir, mothers should be instructed not to breastfeed if they are receiving APTIVUS.

Pediatric Use

Safety and effectiveness in pediatric patients have not been established.

Geriatric Use

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

ADVERSE REACTIONS

APTIVUS (tipranavir), co-administered with 200 mg of ritonavir, has been studied in a total of 1854 HIV-positive adults as combination therapy in clinical studies. Of these, 1397 patients received the dose of 500/200 mg BID. Seven hundred sixty one (761) adults, including 385 in the 1182.12 and 1182.48 Phase 3 pivotal studies, have been treated for at least 24 weeks.

In 1182.12 and 1182.48 in the APTIVUS/ritonavir arm, the most frequent AEs were diarrhea, nausea, fatigue, headache and vomiting. Adverse events leading to discontinuation were reported by 7.8% of the tipranavir-treated patients and 4.9% of the comparator arm patients.

Due to the need for co-administration of APTIVUS with 200 mg of ritonavir, please refer to ritonavir prescribing information for ritonavir-associated adverse reactions.

The most frequent clinical treatment-emergent adverse events reported in Phase 3 clinical studies (1182.12 and 1182.48) in adults are summarized in Table 10 below. Events of moderate to severe intensity (Grades 2-4) reported in at least 2% of highly treatment-experienced subjects in either treatment group are included.

Table 10 Percentage of Patients with Treatment Emergent Adverse Events of at Least Moderate Intensity (Grades 2-4) in $\geq 2\%$ of Patients in Either Treatment Group^a

Phase 3 Studies 1182.12 and 1182.48 (24-weeks)		
	Tipranavir/ritonavir (500/200 mg BID) + OBR (n=746)	Comparator PI/ritonavir ^b + OBR (n=737)
Gastrointestinal Disorders		
Diarrhea	10.9%	9.4%
Nausea	6.7%	4.6%
Vomiting	3.4%	3.0%
Abdominal pain ^c	2.8%	3.7%
General Disorders		
Pyrexia	4.6%	4.3%
Fatigue	4.0%	3.9%
Asthenia	1.5%	2.3%
Infections and Infestations		
Bronchitis	2.9%	1.1%
Nervous System Disorders		
Headache	3.1%	3.1%
Psychiatric Disorders		
Depression	2.0%	3.0%
Insomnia	1.2%	2.6%
Respiratory, Thoracic and Mediastinal Disorders		
Cough	0.8%	2.2%
Skin and Subcutaneous Tissue Disorders		
Rash	2.0%	2.0%

^aExcludes laboratory abnormalities that were Adverse Events
^bComparator PI/RTV: lopinavir/ritonavir 400/100 mg BID, indinavir/ritonavir 800/100 mg BID, saquinavir/ritonavir 1000/100 mg BID, amprenavir/ritonavir 600/100 mg BID
^cAbdominal pain includes Preferred Terms "Abdominal pain" and "Abdominal pain upper"

Clinically meaningful adverse reactions in $< 2\%$ of adult patients (n=1397) treated with APTIVUS/ritonavir 500/200mg in Phase 2 and 3 trials listed below by body system:

Blood and Lymphatic System Disorders: anemia, neutropenia, thrombocytopenia

Gastrointestinal Disorders: abdominal distension, dyspepsia, flatulence, gastroesophageal reflux disease, pancreatitis

General Disorders: influenza like illness, malaise, pyrexia

Hepatobiliary Disorders: hepatitis, hepatic failure

Immune System Disorders: hypersensitivity

Infections and infestations: reactivation of herpes simplex and varicella zoster

Investigations: hepatic enzymes increased, liver function test abnormal, lipase increased, weight decreased

Metabolism and Nutrition Disorders: anorexia, decreased appetite, dehydration, diabetes mellitus, facial wasting, hyperamylasemia, hypercholesterolemia, hyperglycemia

Musculoskeletal and Connective Tissue Disorders: muscle cramp, myalgia

Nervous System Disorders: dizziness, neuropathy peripheral, somnolence

Psychiatric Disorders: insomnia, sleep disorder

Renal and Urinary Disorders: renal insufficiency

Respiratory, Thoracic and Mediastinal Disorders: dyspnea

Skin and Subcutaneous System Disorders: exanthem, lipoatrophy, lipodystrophy acquired, lipohypertrophy, pruritus

Laboratory Abnormalities

Treatment-emergent clinical laboratory abnormalities reported at 24 weeks in Phase 3 clinical studies (1182.12 and 1182.48) in adults are summarized in Table 11 below.

Table 11 Treatment Emergent Laboratory Abnormalities Reported in $\geq 2\%$ of Adult Patients

Studies 1182.12 and 1182.48 (24-weeks)			
		APTIVUS/ritonavir (500/200 mg BID) + OBR (n = 732)	Comparator PI/ritonavir + OBR* (n = 726)
	Limit		
Hematology			
WBC count decrease			
Grade 3-4	$< 2.0 \times 10^3/\mu\text{L}$	3.6%	5.4%
Chemistry			
Amylase			
Grade 3-4	$> 2 \times \text{ULN}$	2.9%	4.8%
ALT			
Grade 2	$> 2.5-5 \times \text{ULN}$	10.7%	5.4%
Grade 3	$> 5-10 \times \text{ULN}$	3.1%	1.4%
Grade 4	$> 10 \times \text{ULN}$	2.7%	0.4%
AST			
Grade 2	$> 2.5-5 \times \text{ULN}$	6.0%	5.8%
Grade 3	$> 5-10 \times \text{ULN}$	3.3%	1.0%
Grade 4	$> 10 \times \text{ULN}$	0.7%	0.4%
ALT and/or AST			
Grade 2-4	$> 2.5 \times \text{ULN}$	17.5%	9.9%
Cholesterol			
Grade 2	$> 300 - 400 \text{ mg/dL}$	11.3%	4.3%
Grade 3	$> 400 - 500 \text{ mg/dL}$	2.5%	0.3%
Grade 4	$> 500 \text{ mg/dL}$	0.8%	0%
Triglycerides			
Grade 2	$400 - 750 \text{ mg/dL}$	26.2%	14.7%
Grade 3	$> 750 - 1200 \text{ mg/dL}$	12.8%	5.6%
Grade 4	$> 1200 \text{ mg/dL}$	6.1%	3.4%

*Comparator PI/RTV: lopinavir/ritonavir 400/100 mg BID, indinavir/ritonavir 800/100 mg BID, saquinavir/ritonavir 1000/100 mg BID, amprenavir/ritonavir 600/100 mg BID

In clinical trials extending up to 48 weeks, the proportion of patients who developed Grade 2-4 ALT and/or AST elevations increased to 24.4% with APTIVUS/ritonavir and to 12.8% with CPI/ritonavir.

OVERDOSAGE

There is no known antidote for tipranavir overdose. Treatment of overdose should consist of general supportive measures, including monitoring of vital signs and observation of the patient's clinical status. If indicated, elimination of unabsorbed tipranavir should be achieved by emesis or gastric lavage. Administration of activated charcoal may also be used to aid in removal of unabsorbed drug. Since tipranavir is highly protein bound, dialysis is unlikely to be beneficial in significant removal of this medicine.

DOSAGE AND ADMINISTRATION

General

The recommended dose of APTIVUS (tipranavir) Capsules is 500 mg (two 250 mg capsules), co-administered with 200 mg of ritonavir, twice daily.

APTIVUS Capsules, co-administered with 200 mg of ritonavir should be taken with food. Bioavailability is increased with a high fat meal.

HOW SUPPLIED

APTIVUS (tipranavir) Capsules 250 mg are pink, oblong soft gelatin capsules imprinted in black with "TPV 250". They are packaged in HDPE unit-of-use bottles with a child resistant closure and 120 capsules. (NDC 0597-0003-02)

APTIVUS capsules should be **stored in a refrigerator 2°-8°C (36°-46°F)** prior to opening the bottle. After opening the bottle, the capsules may be **stored at 25°C (77°F); excursions permitted to 15°-30°C (59°-86°F)** and must be used within 60 days.

Store in a safe place out of the reach of children.

Address medical inquiries to: <http://us.boehringer-ingenelheim.com>, (800) 542-6257 or (800) 459-9906 TTY.

RX ONLY

Distributed by:
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APTIVUS Capsules are covered by U.S. Patents 5,852,195; 6,147,095; 6,169,181 and 6,231,887

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Patient Information

Aptivus [®] (ap' · ti · vəs) (tipranavir) Capsules, 250 mg	 Boehringer Ingelheim
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ALERT: Find out about medicines that should not be taken with Aptivus. Please also read the section “WHO SHOULD NOT TAKE APTIVUS”.

Read the Patient Information that comes with APTIVUS before you start taking it and each time you get a refill. There may be new information. This leaflet does not take the place of talking with your doctor about your medical condition or treatment. You should stay under a doctor’s care while taking APTIVUS.

What is the most important information I should know about APTIVUS?

Patients taking APTIVUS, together with 200 mg NORVIR[®] (ritonavir), may develop severe liver disease that can cause death. If you develop any of the following symptoms of liver problems, you should stop taking APTIVUS/ritonavir treatment and call your doctor right away: tiredness, general ill feeling or “flu-like” symptoms, loss of appetite, nausea (feeling sick to your stomach), yellowing of your skin or whites of your eyes, dark (tea-colored) urine, pale stools (bowel movements), or pain, ache, or sensitivity on your right side below your ribs. If you have chronic Hepatitis B or C infection, your doctor should check your blood tests more often because you have an increased chance of developing liver problems.

What is APTIVUS?

APTIVUS is a medicine called a “protease inhibitor” that is used to treat adults with Human Immunodeficiency Virus (HIV). APTIVUS blocks HIV protease, an enzyme which is needed for HIV to make more virus. When used with other anti-HIV medicines, APTIVUS may reduce the amount of HIV in your blood and increase the number of CD4+ cells. Reducing the amount of HIV in the blood may keep your immune system healthy, so it can help fight infection.

APTIVUS is always taken with NORVIR[®] (ritonavir) and at the same time as NORVIR. When you take APTIVUS with NORVIR, you must always use at least 2 other anti-HIV medicines.

Does APTIVUS cure HIV or AIDS?

APTIVUS does not cure HIV infection or AIDS. The long-term effects of APTIVUS are not known at this time. People taking APTIVUS may still get infections or other conditions common in people with HIV (opportunistic infections). It is very important that you stay under the care of your doctor during treatment with APTIVUS.

Does APTIVUS lower the chance of passing HIV to other people?

APTIVUS does not reduce the chance of passing HIV to others through sexual contact, sharing needles, or being exposed to your blood. Continue to practice safer sex. Use a latex or polyurethane condom or other barrier method to lower the chance of sexual contact with any body fluids such as semen, vaginal secretions or blood. Never use or share dirty needles.

Ask your doctor if you have any questions about safer sex or how to prevent passing HIV to other people.

Who should not take APTIVUS?

Do not take APTIVUS if you:

- are allergic to tipranavir or any of the other ingredients in APTIVUS. See the end of this leaflet for a list of major ingredients.
- are allergic to ritonavir (NORVIR®)
- have moderate to severe liver problems
- take any of the following types of medicines because **you could have serious side effects:**
 - Migraine headache medicines called “ergot alkaloids”. If you take migraine headache medicines, ask your doctor or pharmacist if any of them are “ergot alkaloids”.
 - Halcion® (triazolam)
 - Hismanal® (astemizole)
 - Orap® (pimozide)
 - Propulsid® (cisapride)
 - Seldane® (terfenadine)
 - Versed® (midazolam)
 - Pacenone® (amiodarone)
 - Vascor® (bepridil)
 - Tambocor® (flecainide)
 - Rythmol® (propafenone)
 - Quinaglute dura® (quinidine)

What should I tell my doctor before I take APTIVUS?

Tell your doctor about all of your medical conditions, including if you:

- **have liver problems** or are infected with Hepatitis B or Hepatitis C. These patients may have worsening of their liver disease.
- **are allergic to sulfa medicines.**
- **have hemophilia.** APTIVUS may cause increased bleeding.
- **have diabetes.** APTIVUS may worsen your diabetes or high blood sugar levels.

- **are pregnant or planning to become pregnant.** It is not known if APTIVUS can harm your unborn baby. You and your doctor will need to decide if APTIVUS is right for you. If you take APTIVUS while you are pregnant, talk to your doctor about how you can be in the Antiretroviral Pregnancy Registry.
- **are breast-feeding.** Do not breast-feed if you are taking APTIVUS. You should not breast-feed if you have HIV because of the chance of passing the HIV virus to your baby. Talk with your doctor about the best way to feed your baby.
- **are using estrogens for birth control or hormone replacement.** Women who use estrogens for birth control or hormone replacement have an increased chance of developing a skin rash while taking APTIVUS. If a rash occurs, it is usually mild to moderate, but you should talk to your doctor as you may need to temporarily stop taking either APTIVUS or the other medicine that contains estrogen or female hormones.

Tell your doctor about all the medicines you take including prescription and nonprescription medicines, vitamins and herbal supplements. **APTIVUS and many other medicines can interact. Sometimes serious side effects will happen if APTIVUS is taken with certain other medicines (see “Who should not take APTIVUS?”).**

- Some medicines cannot be taken at all with APTIVUS
- Some medicines will require a change in dosage if taken with APTIVUS
- Some medicines will require close monitoring if taken with APTIVUS.

Women taking birth control pills need to use another birth control method. APTIVUS makes birth control pills work less well.

Know all the medicines you take and keep a list of them with you. Show this list to all your doctors and pharmacists anytime you get a new medicine you take. They will tell you if you can take these other medicines with APTIVUS. **Do not start any new medicines while you are taking APTIVUS without first talking with your doctor or pharmacist.** You can ask your doctor or pharmacist for a list of medicines that can interact with APTIVUS.

How should I take APTIVUS?

- Take APTIVUS exactly as your doctor has prescribed. You should check with your doctor or pharmacist if you are not sure. **You must take APTIVUS at the same time as NORVIR[®] (ritonavir).** The usual dose is 500 mg (two 250 mg capsules) of APTIVUS, together with 200 mg (two 100 mg capsules or 2.5 mL of solution) of NORVIR, twice per day. APTIVUS with NORVIR must be used together with other anti-HIV medicines.

APTIVUS comes in a capsule form and you should **swallow APTIVUS capsules whole. Do not chew the capsules.**

- Always take APTIVUS with food.
- Do not change your dose or stop taking APTIVUS without first talking with your doctor.
- If you take too much APTIVUS, call your doctor or poison control center right away.
- If you forget to take APTIVUS, take the next dose of APTIVUS, together with NORVIR[®] (ritonavir), as soon as possible. Do not take a double dose to make up for a missed dose.

- It is very important to take all your anti-HIV medicines as prescribed and at the right times of day. This can help your medicines work better. It also lowers the chance that your medicines will stop working to fight HIV (drug resistance).
- When your APTIVUS supply starts to run low, get more from your doctor or pharmacy. This is very important because the amount of virus in your blood may increase if the medicine is stopped for even a short period of time. The HIV virus may develop resistance to APTIVUS and become harder to treat. You should NEVER stop taking APTIVUS or your other HIV medicines without talking with your doctor.

What are the possible side effects of APTIVUS?

APTIVUS may cause serious side effects, including:

- **liver problems, including liver failure and death.** Your doctor should do blood tests to monitor your liver function during treatment with APTIVUS. Patients with liver diseases such as Hepatitis B and Hepatitis C may have worsening of their liver disease with APTIVUS and should have more frequent monitoring blood tests.
- **rash.** Mild to moderate rash, including flat or raised rashes or sensitivity to the sun, have been reported in approximately 10% of subjects receiving APTIVUS. Some patients who developed rash also had joint pain or stiffness, throat tightness, or generalized itching.
- **increased bleeding in patients with hemophilia.** This can happen in patients taking APTIVUS or other protease inhibitor medicines.
- **diabetes and high blood sugar (hyperglycemia).** This can happen in patients taking APTIVUS or other protease inhibitor medicines. Some patients have diabetes before starting treatment with APTIVUS which gets worse. Some patients get diabetes during treatment with APTIVUS. Some patients will need changes in their diabetes medicine. Some patients will need new diabetes medicine.
- **increased blood fat (lipid) levels.** Your doctor should do blood tests to monitor your blood fat (triglycerides and cholesterol) during treatment with APTIVUS. Some patients taking APTIVUS have large increases in triglycerides and cholesterol. The long-term chance of having a heart attack or stroke due to increases in blood fats caused by APTIVUS is not known at this time.
- **changes in body fat.** These changes have happened in patients taking APTIVUS. and other anti-HIV medicines. The changes may include an increased amount of fat in the upper back and neck (“buffalo hump”), breast, and around the back, chest, and stomach area. Loss of fat from the legs, arms, and face may also happen. The cause and long-term health effects of these conditions are not known.

The most common side effects include diarrhea, nausea, vomiting, stomach pain, tiredness and headache. Women taking birth control pills may get a skin rash.

It may be hard to tell the difference between side effects caused by APTIVUS, by the other medicines you are also taking, or by the complications of HIV infection. For this reason it is very important that

you tell your doctor about any changes in your health. You should report any new or continuing symptoms to your doctor right away. Your doctor may be able to help you manage these side effects.

The list of side effects is **not** complete. Ask your doctor or pharmacist for more information.

How should I store APTIVUS?

- Store APTIVUS capsules in a refrigerator at approximately **36°F to 46°F (2°C to 8°C)**. Once the bottle is opened, the contents must be used within 60 days. Patients may take the bottle with them for use away from home so long as the bottle remains at a temperature of approximately **59°F to 86°F (15°C to 30°C)**. You can write the date of opening the bottle on the label. Do not use after the expiration date written on the bottle.
- **Keep APTIVUS and all medicines out of the reach of children.**

General advice about APTIVUS

Medicines are sometimes prescribed for purposes other than those listed in a Patient Information leaflet. Do not use APTIVUS for a condition for which it was not prescribed. Do not give APTIVUS to other people, even if they have the same condition you have. It may harm them.

This leaflet summarizes the most important information about APTIVUS. If you would like more information, talk with your doctor. You can ask your pharmacist or doctor for information about APTIVUS that is written for health professionals.

For additional information, you may also call Boehringer Ingelheim Pharmaceuticals, Inc. at 1-800-542-6257, or (TTY) 1-800-459-9906. You may also request information through the company website at <http://us.boehringer-ingelheim.com>.

What are the ingredients in APTIVUS?

Active Ingredient: tipranavir

Major Inactive Ingredients: dehydrated alcohol, polyoxyl 35 castor oil, propylene glycol, mono/diglycerides of caprylic/capric acid and gelatin.

Rx only

Distributed by:
Boehringer Ingelheim Pharmaceuticals, Inc.
Ridgefield, CT 06877 USA

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APTIVUS Capsules are covered by U.S. Patents 5,852,195, 6,147,095, 6,169,181 and 6,231,887

HIGHLIGHTS OF PRESCRIBING INFORMATION

These highlights do not include all the information needed to use FUZEON safely and effectively. See full prescribing information for FUZEON.

FUZEON® (enfuvirtide) for Injection
Initial U.S. Approval: 2003

RECENT MAJOR CHANGES

Warnings and Precautions, Pneumonia (5.3) 04/2011

INDICATIONS AND USAGE

FUZEON is an HIV-1 fusion inhibitor indicated for use in combination with other antiretroviral agents for the treatment of HIV-1 infection in treatment-experienced patients with HIV-1 replication despite ongoing antiretroviral therapy. (1)

DOSAGE AND ADMINISTRATION

- Adults: Recommended FUZEON dose of 90 mg (1 mL) twice daily injected subcutaneously into the upper arm, anterior thigh, or abdomen. FUZEON should not be injected near any anatomical areas where large nerves course close to the skin. (2.1)
- Pediatric Patients (6 to 16 years of age): Recommended 2 mg/kg twice daily up to a maximum dose of 90 mg twice daily injected subcutaneously. Weight should be monitored periodically and the FUZEON dose should be adjusted accordingly. (2.2)
- FUZEON must only be reconstituted with 1.1 mL of Sterile Water for Injection provided in the Convenience Kit. (2.3)
- Reconstituted FUZEON must be injected immediately or kept refrigerated in the original vial. It must be used within 24 hours. (2.3)

DOSAGE FORMS AND STRENGTHS

- Lyophilized powder: 108 mg/vial (3)

CONTRAINDICATIONS

- Hypersensitivity to FUZEON or any of its components. (4)

WARNINGS AND PRECAUTIONS

- Injection Site Reaction: 98% of subjects experienced at least one injection site reaction during FUZEON treatment in randomized, controlled, open-label, multicenter trials. Manifestations included pain and discomfort, erythema, nodules and cysts, and ecchymosis. (5.1)

- Biojector® 2000: Administration of FUZEON with Biojector 2000 may result in neuralgia and/or paresthesia, bruising and hematomas. Patients receiving anticoagulants or persons with hemophilia, or other coagulation disorders, may have a higher risk of post-injection bleeding. (5.2)
- Pneumonia: Monitor for signs and symptoms of pneumonia in HIV-infected patients, especially those predisposed to pneumonia (e.g., low initial CD4 cell count). (5.3)
- Hypersensitivity: FUZEON should be discontinued immediately upon signs and symptoms of systemic hypersensitivity reactions. (5.4)
- Immune Reconstitution: Patients treated with combination antiretroviral therapy, including FUZEON, may experience immune reconstitution syndrome requiring further evaluation and treatment. (5.6)

ADVERSE REACTIONS

Most common adverse reactions are local injection site reactions, diarrhea, nausea, and fatigue. (6.1)

To report SUSPECTED ADVERSE REACTIONS, contact Genentech at 1-888-835-2555 or FDA at 1-800-FDA-1088 or www.fda.gov/medwatch.

DRUG INTERACTIONS

- No dose adjustments of FUZEON or the co-administered drug is needed when FUZEON is administered concomitantly with other antiretroviral or non-antiretroviral drugs. (7, 12.3)

USE IN SPECIFIC POPULATIONS

- Pregnancy: No evidence of harm to the fetus was observed in animal reproduction studies and FUZEON should be used only if clearly needed. (8.1)
- Nursing mothers: Do not breast-feed while receiving FUZEON therapy. (8.3)
- Pediatric Use: Safety and pharmacokinetics of FUZEON have not been established in pediatric patients < 6 years of age. Limited efficacy data for pediatric patients ≥ 6 years of age. (8.4)
- Geriatric Use: No data available for patients ≥ 65 years of age. (8.5)

See 17 for PATIENT COUNSELING INFORMATION and FDA-approved patient labeling.

Revised: 04/2011

FULL PRESCRIBING INFORMATION: CONTENTS*

1	INDICATIONS AND USAGE
2	DOSAGE AND ADMINISTRATION
2.1	Adults
2.2	Pediatric Patients
2.3	Directions for Use
3	DOSAGE FORMS AND STRENGTHS
4	CONTRAINDICATIONS
5	WARNINGS AND PRECAUTIONS
5.1	Local Injection Site Reactions (ISRs)
5.2	Administration with Biojector® 2000
5.3	Pneumonia
5.4	Hypersensitivity Reactions
5.5	Non-HIV Infected Individuals
5.6	Immune Reconstitution Syndrome
6	ADVERSE REACTIONS
6.1	Clinical Trials Experience
7	DRUG INTERACTIONS
7.1	Potential for FUZEON to Affect Other Drugs
7.2	Potential for Other Drugs to Affect Enfuvirtide
8	USE IN SPECIFIC POPULATIONS
8.1	Pregnancy

8.3	Nursing Mothers
8.4	Pediatric Use
8.5	Geriatric Use
8.6	Use in Patients with Hepatic Impairment
8.7	Use in Patients with Renal Impairment
10	OVERDOSAGE
11	DESCRIPTION
12	CLINICAL PHARMACOLOGY
12.1	Mechanism of Action
12.3	Pharmacokinetics
12.4	Microbiology
13	NONCLINICAL TOXICOLOGY
13.1	Carcinogenesis, Mutagenesis, Impairment of Fertility
14	CLINICAL STUDIES
14.1	Description of Clinical Studies
16	HOW SUPPLIED/STORAGE AND HANDLING
16.1	How Supplied
16.2	Storage Conditions
17	PATIENT COUNSELING INFORMATION

*Sections or subsections omitted from the full prescribing information are not listed.