PROFESSIONAL INFORMATION

SCHEDULING STATUS:

S4

PROPRIETARY NAME AND DOSAGE FORM:

VIROPIN 200 mg TABLETS

COMPOSITION:

Each uncoated tablet contains nevirapine 200 mg.

Excipients: colloidal silicon dioxide, lactose monohydrate, magnesium stearate, microcrystalline cellulose, povidone K-30, sodium starch glycollate.

Contains sugar: Lactose monohydrate 340 mg (see **"WARNINGS and SPECIAL PRECAUTIONS"**.)

WARNING:

THE FIRST 18 WEEKS OF THERAPY WITH VIROPIN 200 mg TABLETS IS A CRITICAL PERIOD THAT REQUIRES INTENSIVE MONITORING OF PATIENTS TO IDENTIFY THE POTENTIAL APPEARANCE OF SEVERE AND LIFE-THREATENING SKIN REACTIONS (INCLUDING CASES OF STEVENS-JOHNSON SYNDROME AND TOXIC EPIDERMAL NECROLYSIS) OR SERIOUS HEPATITIS/HEPATIC FAILURE. THE GREATEST RISK OF HEPATIC EVENTS AND SKIN REACTIONS OCCURS IN THE FIRST 6 WEEKS OF THERAPY. WOMEN (3,2 FOLD) AND PATIENTS WITH HIGHER CD4+ (WOMEN WITH CD4+ > 250, 9,8 FOLD; MEN WITH CD4+ > 400, 6,4 FOLD) COUNTS ARE AT INCREASED RISK FOR THESE ADVERSE EVENTS. IN ADDITION, THE DOSAGE, ESPECIALLY THE 14 DAYS LEAD-IN PERIOD, MUST BE STRICTLY ADHERED TO (SEE "DOSAGE AND DIRECTIONS FOR USE").

Cutaneous reactions:

Severe and life threatening skin reactions, including fatal cases, have occurred in patients treated with VIROPIN 200 mg TABLETS. These have included cases of Stevens-Johnson syndrome (SJS), toxic epidermal necrolysis (TEN) and hypersensitivity reactions characterized by rash, constitutional findings and visceral involvement.

Any patient experiencing severe rash or a rash accompanied by constitutional symptoms such as fever, blistering, oral lesions, conjunctivitis, facial oedema, muscle or joint aches, or general malaise should discontinue medication and contact a doctor. These symptoms may be indicative of SJS or TEN. Such patients must not be restarted.

If patients present with suspected VIROPIN 200 mg TABLETS-associated rash, liver function tests should be performed. Patients with moderate to severe elevations (aspartate transaminase (AST) or alanine aminotransferase (ALT) > 5 X ULN) should be permanently discontinued.

If a hypersensitivity syndrome occurs, characterized by rash with constitutional symptoms such as fever, arthralgia, myalgia and lymphadenopathy, plus visceral involvement, such as hepatitis, eosinophilia, granulomatosis, and renal dysfunction, VIROPIN 200 mg TABLETS should be permanently stopped and not be reintroduced.

Hepatic reactions:

Severe or life threatening hepatotoxicity including fatal fulminant hepatitis has occurred in patients treated with nevirapine. Serious hepatic events in women and children have been treated predominantly have been reported. Increased aspartate transaminase (AST) or alanine aminotransferase (ALT levels > 2,5 x ULN) and/or co-infection with hepatitis B and/or C at the start of antiretroviral therapy is associated with greater risk of hepatic adverse events during antiretroviral therapy in VIROPIN 200 mg TABLETS-containing regimens.

Patients with AST or ALT > 5 x ULN before or during treatment, liver tests should be monitored more frequently and VIROPIN 200 mg TABLETS should not be administered to patients who develop AST or ALT > 5 x ULN after treatment AST or ALT > 5 x ULN.

If aspartate transaminase (AST) or alanine aminotransferase (ALT) increase to > 5 x Upper Limit of Normality (ULN) during treatment VIROPIN 200 mg TABLETS should be stopped immediately and not reinstated. If aspartate transaminase (AST) and alanine aminotransferase (ALT) return to baseline values, it may be possible to reintroduce VIROPIN 200 mg TABLETS on a case by case basis, at the starting dosage regimen of 200 mg/day for 14 days followed by 400 mg/day. If liver function abnormalities rapidly recur, VIROPIN 200 mg TABLETS should be permanently discontinued.

If clinical hepatitis occurs, characterized by anorexia, nausea, vomiting, icterus and laboratory findings (such as moderate or severe liver function test abnormalities (alanine transaminase (ALT), VIROPIN 200 mg TABLETS must be permanently stopped. VIROPIN 200 mg TABLETS should not be re-administered to patients who have required permanent discontinuation for clinical hepatitis due to VIROPIN 200 mg TABLETS.

In patients with mild liver function test abnormalities, accompanied by signs of hypersensitivity syndrome characterized by rash with constitutional symptoms such as fever, arthralgia, myalgia and lymphadenopathy, plus visceral involvement such as hepatitis, eosinophilia, granulocytopenia and renal dysfunction, nevirapine should be permanently discontinued.

VIROPIN 200 mg TABLETS should not be restarted in these situations.

RESISTANT VIRUS EMERGES RAPIDLY AND UNIFORMLY WHEN VIROPIN 200 mg TABLETS IS ADMINISTERED AS MONOTHERAPY; THEREFORE, FOR OPTIMUM TREATMENT OF HIV-1 INFECTION, VIROPIN 200 mg TABLETS SHOULD ALWAYS BE ADMINISTERED IN COMBINATION WITH AT LEAST TWO ADDITIONAL ANTIRETROVIRAL AGENTS.

PHARMACOLOGICAL CLASSIFICATION:

A 20.2.8 Antimicrobial (chemotherapeutic) agents. Antiviral agents.

PHARMACOLOGICAL ACTION:

Mechanism of action:

Nevirapine is a non-nucleoside reverse transcriptase inhibitor (NNRTI) of HIV-1. Nevirapine binds directly to reverse transcriptase (RT) and blocks the RNA-dependent and DNA-dependent DNA polymerase activities by causing a disruption of the enzyme's catalytic site. Nevirapine does not compete effectively with template or nucleoside triphosphates. HIV-2 RT and eukaryotic DNA polymerases (such as human DNA polymerases α, ß, γ or δ) are not inhibited by nevirapine.

Resistance: HIV isolates with significantly reduced susceptibility (100 to 250 fold) to nevirapine emerge *in vitro*. Time to emergence of nevirapine resistance *in vivo* and the impact of resistance on therapy with nevirapine in combination with several other NNRTIs.

Cross-resistance: Rapid emergence of HIV strains, which are cross resistant to NNRTI's *in vitro*, have been reported.

Pharmacokinetic properties:

Adults:

Nevirapine is readily absorbed (> 90 %) after oral administration in healthy volunteers and in adults with HIV-1 infection. **Following administration of VIROPIN 200 mg TABLETS in combination with other antiretroviral agents, peak plasma concentrations (C_{max}) of about 2,0 to 2,5 µg/ml are attained at about 4 hours.**

Following multiple doses, nevirapine peak concentrations appear to increase linearly in the dose range of 200 to 400 mg/day. Steady state trough nevirapine concentrations of 4,5 ± 1,9 µg/ml (17± 7 µm) were attained at 400 mg/ day. The absorption of nevirapine is not affected by food, antacids or moderately altered pH. It can be formulated with an alkaline buffering agent (e.g. didanosine).

Nevirapine is highly lipophilic and is essentially non-ionized at physiologic pH. Following intravenous administration to healthy adults, the apparent volume of distribution at steady state (Vdss) of nevirapine was 1,21 ± 0,09 l/kg, suggesting that nevirapine is widely distributed in humans. Nevirapine readily crosses the placenta and is found in breast milk. Nevirapine is about 60 % bound to plasma proteins in the plasma concentration range of 1 to 10 µg/ml. Binding to human serum albumin accounts for about 40 % of the binding. The concentration of nevirapine in plasma is approximately equal to the fraction not bound to plasma protein.

In vivo studies in humans and *in vitro* studies with human liver microsomes have shown that nevirapine is extensively biotransformed via cytochrome P450 enzymes from the CYP3A subfamily. Nevirapine requires may have a secondary role. Approximately 91,4 ± 10,5 % of a radiolabeled dose was recovered, with urine (81,3 ± 11, 1 %) representing the primary route of excretion and faeces (10,1 ± 1,5 %). Nevirapine is an inducer of hepatic cytochrome P450 metabolic enzymes. This autoinduction also results in a corresponding decrease in the terminal phase half-life of nevirapine in plasma from approximately 45 hours (single dose) to approximately 25 to 30 hours following multiple dosing with 200 to 400 mg/day.

Nevirapine also undergoes autoinduction resulting in 1,5 to 2-fold increase in metabolism. This effect is at its highest after 14 days of initiation of therapy.

Pharmacokinetics in Special Populations:

Renal/Hepatic Dysfunction: The pharmacokinetics of **VIROPIN 200 mg TABLETS** have not been evaluated in patients with either renal or hepatic dysfunction.

Gender: There are no significant gender differences in **VIROPIN 200 mg TABLETS** clearance or plasma concentrations following either single or multiple dose administration.

Race: Pooled data from several clinical studies demonstrate no racial difference in nevirapine steady-state trough concentrations with long-term nevirapine treatment at 400 mg/day.

Geriatrics: Nevirapine pharmacokinetics in HIV-1 infected adults do not appear to change with age (range 18 to 68 years).

INDICATIONS:

For treatment of HIV-1 infection:

VIROPIN 200 mg TABLETS (nevirapine) is indicated for use in combination with other antiretroviral agents for the treatment of HIV-1 infection. Resistant virus emerges rapidly and uniformly when **VIROPIN 200 mg TABLETS** is administered as monotherapy. Therefore, **VIROPIN 200 mg TABLETS** should always be administered in combination with at least two additional antiretroviral agents.

CONTRAINDICATIONS:

VIROPIN 200 mg TABLETS is contraindicated in patients with hypersensitivity to the active ingredient or any of the excipients of the product.

VIROPIN 200 mg TABLETS is contraindicated in severe hepatic dysfunction: Child-Pugh class B or C and in end-stage renal failure in patients not on haemodialysis.

VIROPIN 200 mg TABLETS should not be co-administered to patients with pre-treatment or during treatment with aspartate transaminase (AST) or alanine aminotransferase (ALT) > 5 X Upper Level of Normality (ULN) until baseline ASTALT are stabilised < 5 ULN.

VIROPIN 200 mg TABLETS should not be re-administered to patients who have required permanent discontinuation for severe rash, rash accompanied by constitutional symptoms; hypersensitivity syndrome, or clinical hepatitis due to **VIROPIN 200 mg TABLETS**.

VIROPIN 200 mg TABLETS should not be re-administered to patients who previously had aspartate transaminase (AST) or alanine aminotransferase (ALT) > 5 x Upper Limit of Normal (ULN) during **VIROPIN 200 mg TABLETS** therapy or had subsequent recurrence of liver function abnormalities upon re-initiation of **VIROPIN 200 mg TABLETS** (See **"WARNINGS and SPECIAL PRECAUTIONS"**).

Patients with pre-treatment aspartate transaminase (AST) or alanine aminotransferase (ALT) of 2 to 3 x Upper Limit of Normal (ULN) should be observed frequently during the early treatment period for development of either clinical or laboratory evidence of liver function abnormalities.

Human reproduction: The safety of **VIROPIN 200 mg TABLETS** in pregnant or lactating women has not been established. Adequate contraception should be employed in women.

WARNINGS and SPECIAL PRECAUTIONS:

The first 18 weeks of therapy with **VIROPIN 200 mg TABLETS** is a critical period, which requires intensive monitoring of patients to identify the potential appearance of severe, and life threatening skin reactions (including cases of Stevens-Johnson syndrome and toxic epidermal necrolysis) or serious hepatic/hepatic failure. The greatest risk of hepatic events and skin reactions occurs in the first 6 weeks of therapy. Women (3,2 fold) and patients with higher CD4 (women with CD4+ > 250, 9,8 fold; men with CD4+ > 400, 6,4 fold) counts are at increased risk of hepatic adverse events. In addition, the dosage, especially the 14 days lead-in period, must be strictly adhered to (see **"DOSAGE AND DIRECTIONS FOR USE"**).

Patients should be instructed that the major toxicity of VIROPIN 200 mg TABLETS is skin rashes and should be advised to promptly notify their doctor of any rash. The lead-in period should be used because it has been found to lessen the frequency of rash (see "DOSAGE AND DIRECTIONS FOR USE").

The majority of rashes associated with nevirapine occur within the first 6 weeks of therapy; therefore, patients should be monitored carefully for the appearance of any rash during this period. Patients should be instructed that dose escalation is not to occur if any rash occurs during the lead-in dosing period, until the rash has resolved.

Skin reactions:

Severe and life threatening skin reactions, including fatal cases, have occurred in patients treated with nevirapine. These have included cases of Stevens-Johnson syndrome (SJS), toxic epidermal necrolysis (TEN) and hypersensitivity syndrome characterized by rash, constitutional findings and visceral involvement. Patients should be counselled about the first 18 weeks of treatment. Patients should be closely monitored if an isolated rash occurs.

VIROPIN 200 mg TABLETS must be permanently discontinued in any patient experiencing severe rash or a rash accompanied by constitutional symptoms (such as fever, blistering, oral lesions, conjunctivitis, facial oedema, muscle or joint aches or general malaise), including hypersensitivity syndrome or toxic epidermal necrolysis. VIROPIN 200 mg TABLETS must be permanently discontinued in any patient experiencing hypersensitivity syndrome characterized by rash with constitutional symptoms, plus visceral involvement, such as hepatitis, eosinophilia, granulocytopenia and renal dysfunction or signs of other visceral involvement (see EFFECTS ON LABORATORY TESTS).

Concomitant prednisone use (40 mg/day for the first 14 days of nevirapine administration) has been shown not to decrease the incidence of nevirapine associated rash, but to be associated with an increased risk during the first 6 weeks of nevirapine therapy.

During the first 6 weeks of therapy, cutaneous reactions include failure to follow the initial dosing of 200 mg daily during the lead-in period. A long duration between the initial symptoms and medical consultation may increase the risk of a more serious outcome of cutaneous reactions. Women are at a 3,2 fold higher risk than men of developing rash. Women with a CD4+ count of ≥ 250 cells/mm³ are at a 9,8 fold increased risk.

Any patient experiencing severe rash or a rash accompanied by constitutional symptoms such as fever, blistering, oral lesions, conjunctivitis, facial oedema, muscle or joint aches, or general malaise should discontinue medication and contact a doctor. These symptoms may be indicative of SJS or TEN. Such patients must not be restarted.

If patients present with a suspected VIROPIN 200 mg TABLETS-associated rash, liver function tests should be performed immediately. Patients with moderate to severe elevations (AST or ALT > 5 x ULN) should be permanently discontinued (see DOSAGE AND DIRECTIONS FOR USE).

In patients with a hypersensitivity syndrome, characterized by rash with constitutional symptoms such as fever, arthralgia, myalgia and lymphadenopathy, plus visceral involvement, such as hepatitis, eosinophilia, granulocytopenia and renal dysfunction, VIROPIN 200 mg TABLETS should be permanently stopped and not be reintroduced.

Hepatic reactions:

Severe or life threatening hepatotoxicity including fatal fulminant hepatitis has occurred in patients treated with nevirapine. Serious hepatic events in women and children have been treated predominantly have been reported. Increased aspartate transaminase (AST) or alanine aminotransferase (ALT levels > 2,5 x ULN) and/or co-infection with hepatitis B and/or C at the start of antiretroviral therapy is associated with greater risk of hepatic adverse events during antiretroviral therapy in VIROPIN 200 mg TABLETS-containing regimens.

Patients with AST or ALT > 5 x ULN before or during treatment, liver tests should be monitored more frequently and VIROPIN 200 mg TABLETS should not be administered to patients who develop AST or ALT > 5 x ULN after treatment AST or ALT > 5 x ULN.

If aspartate transaminase (AST) or alanine aminotransferase (ALT) increase to > 5 x Upper Limit of Normality (ULN) during treatment VIROPIN 200 mg TABLETS should be stopped immediately and not reinstated. If aspartate transaminase (AST) and alanine aminotransferase (ALT) return to baseline values, it may be possible to reintroduce VIROPIN 200 mg TABLETS on a case by case basis, at the starting dosage regimen of 200 mg/day for 14 days followed by 400 mg/day. If liver function abnormalities rapidly recur, VIROPIN 200 mg TABLETS should be permanently discontinued.

If clinical hepatitis occurs, characterized by anorexia, nausea, vomiting, icterus and laboratory findings (such as moderate or severe liver function test abnormalities (alanine transaminase (ALT), VIROPIN 200 mg TABLETS must be permanently stopped. VIROPIN 200 mg TABLETS should not be re-administered to patients who have required permanent discontinuation for clinical hepatitis due to VIROPIN 200 mg TABLETS.

In patients with mild liver function test abnormalities, accompanied by signs of hypersensitivity syndrome characterized by rash with constitutional symptoms such as fever, arthralgia, myalgia and lymphadenopathy, plus visceral involvement such as hepatitis, eosinophilia, granulocytopenia and renal dysfunction, nevirapine should be permanently discontinued.

VIROPIN 200 mg TABLETS should not be restarted in these situations.

RESISTANT VIRUS EMERGES RAPIDLY AND UNIFORMLY WHEN VIROPIN 200 mg TABLETS IS ADMINISTERED AS MONOTHERAPY; THEREFORE, FOR OPTIMUM TREATMENT OF HIV-1 INFECTION, VIROPIN 200 mg TABLETS SHOULD ALWAYS BE ADMINISTERED IN COMBINATION WITH AT LEAST TWO ADDITIONAL ANTIRETROVIRAL AGENTS.

Women have a threefold higher risk than men for rash-associated hepatic events (4,6 % vs. 1,5 %). Patients with higher CD4 counts may also be at a higher risk for rash-associated hepatic events with **VIROPIN 200 mg TABLETS**. In a retrospective review, women with CD4 counts > 250 cells/mm³ had a 9,8 fold higher risk of rash-associated hepatic adverse event compared to women with CD4 counts < 250 cells/mm³ (0,84 % vs. 0,9 %). An increased risk (6,4 fold) was observed in men with CD4 counts > 400 cells/mm³ compared to men with CD4 counts < 400 cells/mm³ (4,5 % vs. 0,7 %).

Patients should be informed that hepatic reactions are a major toxicity of **VIROPIN 200 mg TABLETS** requiring close monitoring during the first 18 weeks. However, severe liver disease can occur after 18 weeks. Therefore monitoring should continue at frequent intervals after this period depending on the patient's clinical status. They should be informed that occurrence of symptoms suggestive of hepatitis should lead them to contact their doctor promptly.

Liver function monitoring:

All patients should have baseline liver function tests prior to **VIROPIN 200 mg TABLETS** treatment (see **"WARNINGS and SPECIAL PRECAUTIONS"** and **"CONTRAINDICATIONS"**).

If aspartate transaminase (AST) or alanine aminotransferase (ALT) are > 2,5 x Upper Limit of Normal (ULN) before or during treatment, liver tests should be monitored more frequently during more regular clinic visits. **VIROPIN 200 mg TABLETS** should not be administered or re-administered to patients with pre-treatment AST > 5 x ULN.

Abnormal liver function has been reported with nevirapine, some in the first few weeks of therapy. Asymptomatic elevations of liver enzymes are frequently observed during nevirapine therapy and require close monitoring. Asymptomatic GGT elevations are not a contraindication to continuing therapy. Monitoring of liver function tests is strongly recommended during the first 18 weeks of therapy, when the risk of hepatic events is highest during the first 2 to 3 months of treatment. Less frequent monitoring is needed thereafter. Doctors and patients should be vigilant for symptoms of hepatitis (including, but not limited to, anorexia, nausea, jaundice, bilirubinuria, acholic stools, hepatomegaly or liver tenderness.

Patients should be instructed to seek medical attention if these occur.

If aspartate transaminase (AST) or alanine aminotransferase (ALT) increase to > 5 x Upper Limit of Normality during treatment, VIROPIN 200 mg TABLETS should be immediately stopped. If aspartate transaminase (AST) and alanine aminotransferase (ALT) return to baseline values, it may be possible to reintroduce VIROPIN 200 mg TABLETS on a case by case basis, at the starting dosage of 200 mg/ day for 14 days followed by 400 mg/day. If liver function abnormalities rapidly recur, VIROPIN 200 mg TABLETS should be permanently discontinued.

If clinical hepatitis occurs, characterized by anorexia, nausea, vomiting, icterus and laboratory findings such as moderate or severe liver function test abnormalities (alanine transaminase (ALT), VIROPIN 200 mg TABLETS must be permanently stopped. VIROPIN 200 mg TABLETS should not be re-administered to patients who have required permanent discontinuation for clinical hepatitis due to VIROPIN 200 mg TABLETS.

General: When administering **VIROPIN 200 mg TABLETS** as part of an antiretroviral treatment regimen, the complete product information for each therapeutic component should be consulted before initiation of treatment.

While nevirapine is extensively metabolized by the liver and nevirapine metabolites are extensively eliminated by the kidney, the pharmacokinetic profile suggests caution should be exercised when **VIROPIN 200 mg TABLETS** is administered to patients with more than mild hepatic dysfunction. **VIROPIN 200 mg TABLETS** should not be administered to patients with severe hepatic dysfunction (ASTALT > 5 x ULN). In patients with renal dysfunction who are undergoing haemodialysis, pharmacokinetics results suggest that supplementing **VIROPIN 200 mg TABLETS** therapy with an additional 200 mg dose of **VIROPIN 200 mg TABLETS** following each haemodialysis treatment would help offset the effects of haemodialysis on nevirapine clearance. Otherwise patients with severe renal failure (creatinine clearance < 20 ml/min) should not receive **VIROPIN 200 mg TABLETS**.

Renal Dysfunction: **VIROPIN 200 mg TABLETS** and antiretroviral agents may continue to develop opportunistic infections and other complications of HIV infection. Patients should therefore remain under close supervision by medical practitioners experienced in the treatment of patients with HIV-associated diseases.

Immune Reconstitution Inflammatory Syndrome

Immune reconstitution inflammatory syndrome (IRIS) is an immunopathological response resulting from the rapid restoration of pathogen-specific immune responses to pre-existing antigens combined with immune dysregulation, which occurs shortly after starting combination Anti-Retroviral Therapy (cART). Significant IRIS reaction presents by paradoxical deterioration of opportunistic infections being treated or with unmasking of an occult opportunistic infection. Autoimmune disorders (such as Graves' disease) may also be reactivated within the first few months of initiation of cART and occurs more commonly in patients with low CD4 counts. Common examples of IRIS reactions to opportunistic diseases are tuberculosis, cytomegalovirus retinitis and cryptococcal meningitis.

Appropriate treatment of the opportunistic disease should be instituted or continued and cART continued. Inflammatory manifestations usually occur within the first few weeks. Severe cases seen in patients with severe CD4 counts, but there is only limited evidence for this in patients with tuberculosis IRIS. Autoimmune disorders (such as Graves' disease) have also been reported as IRIS reactions however the reported time to onset is more variable and these events can occur many months after initiation of treatment.

Osteonecrosis

Although the aetiology is considered to be multifactorial (including corticosteroid use, alcohol consumption, severe immunosuppression, higher overall body mass index), cases of osteonecrosis have been reported, particularly in patients with advanced HIV-disease and/or long-term exposure to combination Anti-Retroviral Therapy (cART). Patients should be advised to seek medical advice if they experience joint aches and pain, joint stiffness or difficulty in movement.

Opportunistic infections

Patients receiving **VIROPIN 200 mg TABLETS** should be advised that they may continue to develop opportunistic infections and other complications of HIV infection and therefore they should remain under close observation by HIV-experienced professionals experienced in the treatment of patients with associated HIV-disease. Regular monitoring of full blood counts needs to be done.

The risk of HIV transmission to others

Patients should be advised that current antiretroviral therapy, including **VIROPIN 200 mg TABLETS**, does not prevent the risk of transmission of HIV to others through sexual contact or blood contamination. Appropriate precautions should continue to be employed.

Effects on ability to drive and use machines

There are no specific studies about the ability to drive vehicles and use machinery. However, somnolence has been reported in association with nevirapine therapy and if this occurs during **VIROPIN 200 mg TABLETS** administration it is advisable to refrain from such activities.

VIROPIN 200 mg TABLETS contain lactose.

Patients with the rare hereditary conditions of galactose intolerance e.g. galatosaemia, Lapp lactase deficiency, or glucose-galactose malabsorption should not take **VIROPIN 200 mg TABLETS**.

Lactose may have an effect on the glycaemic control of patients with diabetes mellitus.

INTERACTIONS:

Nevirapine has been shown to be an inducer of hepatic cytochrome P450 metabolic enzymes (CYP3A, CYP2B) and may result in lower plasma concentrations of other concomitantly administered medicines that are extensively metabolized by CYP3A or CYP2B enzymes. Co-administration of **VIROPIN 200 mg TABLETS** with these medicines may require a dosage regimen for a medicine metabolized by CYP3A or CYP2B and begins treatment with **VIROPIN 200 mg TABLETS**. Effects on other medicines:

Nucleoside Analogues: No dosage adjustments are required when **VIROPIN 200 mg TABLETS** is taken in combination with stavudine, lamivudine, zidovudine, didanosine, zalcitabine or abacavir.

Protease inhibitors: In the following studies, nevirapine was given 200 mg once daily for two weeks followed by 200 mg twice daily for 28 days.

Saquinavir: Co-administration of nevirapine and saquinavir (hard gelatin capsules, 600 mg bid) leads to a 24 % mean reduction in saquinavir AUC and a 4 % median reduction in saquinavir trough concentrations levels. The reduction in saquinavir levels due to this interaction may further reduce the marginal plasma levels of saquinavir which are achieved with the hard gelatin capsule formulation. The clinical significance of this interaction is not known.

Co-administration did not affect the pharmacokinetics of nevirapine.

Ritonavir: No dosage adjustments are required when nevirapine is taken in combination with ritonavir.

Indinavir: Nevirapine and indinavir (800 mg tid) co-administration leads to a 28 % mean decrease (p < 0,01) in indinavir AUC and no significant change in nevirapine plasma levels. A dose increase of indinavir to 1 000 mg q8h should be considered when indinavir is co-administered with nevirapine 200 mg bid. However, there are no data currently available to establish that the short term or long term antiviral activity of indinavir 1 000 mg q8h with nevirapine 200 mg bid will offer better clinical benefit than indinavir 800 mg q8h with nevirapine 200 mg bid.

Nelfinavir: Nevirapine, nelfinavir (750 mg tid) and stavudine (30 to 40 mg bid) given in combination indicated no statistically significant changes in nelfinavir or pharmacokinetic parameters after the addition of nevirapine (AUC +4 %, C_{max} +14 % and C_{min} −2 %).

Compared to patients not receiving nevirapine levels appeared to be unchanged.

There were no increased safety concerns noted when nevirapine was administered in combination with any of the protease inhibitors.

Ketoconazole: Ketoconazole and nevirapine should not be given concomitantly. Administration of nevirapine 200 mg bid with ketoconazole 400 mg qd resulted in a significant reduction (63 % median reduction in ketoconazole AUC and a 40 % median reduction in ketoconazole C_{min}). In the same study, ketoconazole administration resulted in a 15 fold increase in the plasma levels of nevirapine compared to historical controls. The effects of nevirapine on itraconazole are not known. Although interaction studies have not been performed, antifungal medicinal products which are eliminated by CYP3A enzymes might be affected by co-administration.

Fluconazole: Co-administration of fluconazole and nevirapine resulted in approximately 100 % increase in nevirapine exposure compared with historical data where nevirapine was administered alone. Because of the risk of increased exposure to nevirapine, caution should be exercised if **VIROPIN 200 mg TABLETS** and fluconazole are given concomitantly. Patients should be monitored for evidence of nevirapine toxicity if treated with this combination of nevirapine.

Anticoagulants: The *in vitro* interaction between nevirapine and the antithrombotic agent warfarin is complex. As a result, when giving these drugs concomitantly plasma warfarin levels and therapeutic efficacy may change with the potential for both increased or decreased anticoagulation effects. The effect of the interaction on warfarin dose during the first weeks of co-administration or upon discontinuation of nevirapine. When warfarin is co-administered with nevirapine close patient monitoring is recommended.

CYP isoenzyme inducers (e.g. rifampicin, rifabutin): Nevirapine in combination with rifampicin resulted in no significant change in nevirapine AUC (−8 %), C_{max} (−8 %), C_{min} (−8 %) compared to historical data. At present there are insufficient data to assess with confidence when rifabutin and nevirapine are co-administered.

Rifabutin: Administration of nevirapine 200 mg twice daily with rifabutin 300 mg four times daily (or 150 mg four times daily if concomitant clarithromycin is also administered), resulted in a significant reduction in rifabutin concentrations (29 % mean increase in rifabutin AUC and a 28 % mean increase in rifabutin C_{min}) and a significant increase (35 %) in 25-O-desacetyl-rifabutin AUC, a pharmacologically active metabolite of rifabutin. Nevirapine concentrations were unaffected. Although a potential alternate therapy to clarithromycin should be considered when treating a patient for *Mycobacterium avium-intracellulare* complex (MAC), as the active metabolite is not effective against MAC.

Oral contraceptives: Other means of contraception (such as barrier methods) are recommended, when nevirapine is administered with oral contraceptives containing ethinyl oestradiol or other hormonal contraceptives when used with nevirapine. For other therapeutic uses requiring hormonal regulation, the therapeutic effect in patients taking hormonal birth nevirapine should be monitored.

Methadone: Based on the metabolism of methadone, **VIROPIN 200 mg TABLETS** may decrease plasma concentrations of methadone. The pharmacokinetic changes in hepatic metabolism. Narcotic withdrawal syndrome has been reported in patients treated with nevirapine and methadone concomitantly. Methadone-maintained patients beginning **VIROPIN 200 mg TABLETS** therapy should be monitored for evidence of withdrawal and methadone dose should be adjusted accordingly.

Other information on drug interactions:

In vitro: Studies using human liver microsomes indicated that the formation of nevirapine hydroxylated metabolites was not affected by the presence of diapsone, rifabutin, rifampicin and trimprim/sulphamethoxazole. Ketoconazole and erythromycin significantly inhibited the formation of nevirapine hydroxylated metabolites. Clinical studies have not been performed.

It should be noted that other compounds that are substrates of CYP3A or CYP2B6 may have decreased plasma concentrations when co-administered with **VIROPIN 200 mg TABLETS**.

HUMAN REPRODUCTION:

See **"CONTRAINDICATIONS"**.

DOSAGE AND DIRECTIONS FOR USE:

Adults: The recommended dose for **VIROPIN 200 mg TABLETS** is one 200 mg tablet daily for the first 14 days **(this lead-in period should be used because it has been found to lessen the frequency of rash)**, followed by one 200 mg tablet twice daily, in combination with at least two antiretroviral agents to which the patient has not been previously resistant. For combination antiretroviral therapy, the recommended dosage and monitoring should be followed.

The total daily dose should not exceed 400 mg.

Patients should be advised to take **VIROPIN 200 mg TABLETS** every day as prescribed.

Patients should not double the dose without consulting their doctor. If a dose is skipped, patients should not double the next dose but should take the next dose as soon as possible.

Monitoring of patients: Clinical monitoring, including liver function tests, should be performed prior to initiating **VIROPIN 200 mg TABLETS** therapy and at appropriate intervals during therapy. (See **"WARNINGS and SPECIAL PRECAUTIONS"**).

Dosage Adjustment: VIROPIN 200 mg TABLETS should be discontinued if patients experience severe rash or a rash accompanied by constitutional findings (See "WARNINGS and SPECIAL PRECAUTIONS"). Patients experiencing rash during the 14-day lead-in period of 200 mg/day should not have VIROPIN 200 mg TABLETS dose increased until the rash has resolved (See "WARNINGS and SPECIAL PRECAUTIONS").

VIROPIN 200 mg TABLETS administration should be interrupted in patients experiencing moderate liver function test abnormalities, e.g. AST or ALT > 5 X ULN [excluding gamma glutamyl transferase (GGT)]. If aspartate transaminase (AST) or alanine aminotransferase (ALT) return to baseline values and if the patient has no clinical signs and symptoms of hepatitis, nausea or constitutional symptoms, dosing could be re-initiated at the dose corresponding to rechallenge **VIROPIN 200 mg TABLETS**, based on clinical judgment and considering the case by case basis. **VIROPIN 200 mg TABLETS** may then be restarted at 200 mg daily increasing to 200 mg twice daily with caution, after extended observation. If moderate or severe liver function test abnormalities recur, **VIROPIN 200 mg TABLETS** should be permanently discontinued (See **"WARNINGS and SPECIAL PRECAUTIONS"**).

Patients who interrupt **VIROPIN 200 mg TABLETS** dosing for more than 7 days should restart the recommended dosing using one 200 mg tablet daily for the first 14 days (lead-in) followed by one 200 mg tablet twice daily.

For the dosage for patients with hepatic dysfunction including those undergoing haemodialysis, please refer to the section **"Pharmacokinetic Properties"**.

SIDE EFFECTS:

Frequency classes: very common (>1/10); common (> 1/100, < 1/10); uncommon (> 1/1,000, < 1/100), rare (> 1/10,000, < 1/1,000); very rare (< 1/10,000).

Blood and lymphatic system disorders:

Rare: granulocytopenia, anaemia

Immune system disorders:

Common: allergic reactions

Rare: hypersensitivity (syndrome), anaphylaxis

Nervous system disorders:

Common: headache

Gastrointestinal disorders:

Common: nausea

Uncommon: vomiting, abdominal pain

Rare: diarrhoea

Hepato-biliary disorders:

Common: hepatitis (1,2 %), liver function tests abnormal

Uncommon: jaundice

Rare: liver failure/fulminant hepatitis

Skin and subcutaneous tissue disorders:

Common: rash (9 %)

Uncommon: Stevens-Johnson syndrome (0,3 %), urticaria

Rare: toxic epidermal necrolysis, angioedema

Musculoskeletal, connective tissue and bone disorders:

Uncommon: myalgia

Rare: arthralgia

General disorders and administration site conditions:

Uncommon: fatigue, fever

Post marketing experience has shown that the most serious adverse reactions are Stevens-Johnson syndrome, toxic epidermal necrolysis, serious hepatitis/hepatic failure and hypersensitivity syndrome, characterized by rash with constitutional symptoms such as fever, arthralgia, myalgia and lymphadenopathy, plus visceral involvements, such as hepatitis, eosinophilia, granulocytopenia and renal dysfunction. The first 18 weeks of treatment is a critical period, which requires close monitoring (See **"WARNINGS and SPECIAL PRECAUTIONS"**).

Skin and subcutaneous tissue disorders:

The most common clinical toxicity of **VIROPIN 200 mg TABLETS** is rash. Nevirapine attributable rash occurred in 16 % of patients in combination regimens in **Phase II/III** controlled studies. In these clinical trials 35 % of patients treated with nevirapine experienced rash compared with 19 % of patients treated in control groups of either zidovudine + didanosine or zidovudine alone. Severe or life threatening skin reactions occurred in 6,6 % of nevirapine treated patients compared with 1,3 % of patients treated in the control groups. Overall, 7 % of patients discontinued nevirapine due to rash.

Rashes are usually mild to moderate, maculopapular erythematous cutaneous eruptions, with or without pruritus, located on the trunk, face and extremities. Allergic reactions (anaphylaxis, angioedema and urticaria) have been reported. Severe and life threatening skin reactions have occurred in patients treated with nevirapine, including Stevens-Johnson syndrome (SJS) and toxic epidermal necrolysis (TEN). Fatal cases of SJS, TEN and hypersensitivity syndrome have been reported.

Rashes may occur alone or in the context of hypersensitivity syndrome characterized by rash with constitutional symptoms such as fever, arthralgia, myalgia and lymphadenopathy plus visceral involvement, such as hepatitis, eosinophilia, granulocytopenia and renal dysfunction.

VIROPIN 200 mg TABLETS must be discontinued immediately in patients developing a severe rash or a rash accompanied by constitutional symptoms.

The majority of rashes of any severity occur within the first 6 weeks of treatment and some patients required hospitalization.

Functional groupings of cutaneous eruptions (rashes) presumed to be related to nevirapine:

Group I: Erythema, pruritus

Group IIA: One of the two following clinical presentations.

1. Diffuse erythematous macular or maculopapular cutaneous eruption or dry desquamation with or without pruritus without the presence of any additional constitutional findings as described in **Group III.**
2. Typical target lesions without blistering, vesicles or ulcerations in the lesions (usually referred to as erythema multiforme minor).

Group IIB: Urticaria

Group III: One of the five following clinical presentations

1. Extensive erythematous or maculopapular rash or moist desquamation with or without pruritus together with the presence of any of the following constitutional findings:
   - Clinically relevant increases in any one or more of the following liver function tests: Aspartate transaminase (AST), alanine aminotransferase (ALT), alkaline phosphatase and which are possibly related to the drug reaction.
   - Fever, defined as > 39 °C possibly related to drug reaction.
   - Blistering and/or vesiculation of cutaneous eruptions.
   - One site of extensive mucosal lesions which are presumed to be due to medicine reaction (e.g. not due to herpes simplex, CMV).
2. Angioedema
3. Exfoliative dermatitis: Severe widespread erythema and dry scaling of the skin with generalized superficial lymphadenopathy and with other constitutional findings such as fever, weight loss, hypoproteinaemia which could possibly be related to a medicine reaction.
4. Diffuse rash and serum sickness-like reactions defined as a clinical symptom complex manifested as fever, lymphadenopathy, oedema, myalgia and/or arthralgia and the symptoms are thought to be related to nevirapine.
5. Diffuse cutaneous eruptions, usually starting on the face and trunk or back, often with prodromal symptoms (e.g. fever, general malaise, myalgia, arthralgia) plus cutaneous bullae with widespread sheet like detachment covering > 10 % of body surface area. Two or more anatomically distinct sites of mucosal erosion or ulceration not due to another cause (e.g. herpes simplex, CM