

1. Name of the Medicinal Product

Dolutegravir Sodium Tablets 50 mg

2. Qualitative and Quantitative Composition

Each film coated tablet contains:

Dolutegravir sodium
equivalent to Dolutegravir 50 mg

For Excipients see point 6.1

3. Pharmaceutical Form

Film Coated Tablet

4. Clinical Particulars

4.1 Therapeutic indications

Dolutegravir Sodium Tablets 50mg is indicated in combination with other anti-retroviral medicinal products for the treatment of Human Immunodeficiency Virus (HIV) infected adults, adolescents and children above 6 years of age .

4.2 Posology and method of administration

Dolutegravir Sodium Tablets 50mg should be prescribed by physicians experienced in the management of HIV infection.

Posology

Adults

Patients infected with HIV-1 without documented or clinically suspected resistance to the integrase class

The recommended dose of dolutegravir is 50 mg (one tablet) orally once daily.

Dolutegravir Sodium Tablets 50mg should be administered twice daily in this population when co-administered with some medicines (e.g. efavirenz, nevirapine, tipranavir/ritonavir, or rifampicin).

Patients infected with HIV-1 with resistance to the integrase class (documented or clinically suspected)

The recommended dose of dolutegravir is 50 mg (one tablet) twice daily.

In the presence of documented resistance that includes Q148 + \geq 2 secondary mutations from G140A/C/S, E138A/K/T, L74I, modelling suggests that an increased dose may be considered for patients with limited treatment options (less than 2 active agents) due to advanced multi class resistance.

The decision to use dolutegravir for such patients should be informed by the integrase resistance pattern.

Adolescents aged 12 and above

In adolescents (12 to less than 18 years of age and weighing at least 40 kg) infected with HIV-1 without resistance to the integrase class, the recommended dose of dolutegravir is 50 mg once daily. In the presence of integrase inhibitor resistance, there are insufficient data to recommend a dose for dolutegravir in adolescents.

Children 6 to less than 12 years of age

In patients infected with HIV-1 without resistance to the integrase class, the recommended dose of dolutegravir in children (6 to less than 12 years of age and weighing at least 15 kg) is determined according to the weight of the child.

In the presence of integrase inhibitor resistance, there are insufficient data to recommend a dose for dolutegravir in children. Dose recommendations according to weight are presented in table.

Table Paediatric dose recommendations

Body weight (kg)	Dose
15 to less than 20	20 mg once daily (Taken as two 10 mg tablets)
20 to less than 30	25 mg once daily
30 to less than 40	35 mg once daily (Taken as one 25 mg and one 10 mg tablet)
40 or greater	50 mg once daily

The specific dosage recommendation for the 10 mg tablet, as specified in above Table, should be followed. Therefore, the 50 mg once daily dose should not be given as five 10 mg tablets.

Missed doses

If the patient misses a dose of Dolutegravir Sodium Tablets 50mg, the patient should take Dolutegravir Sodium Tablets 50mg as soon as possible, providing the next dose is not due within 4 hours. If the next dose is due within 4 hours, the patient should not take the missed dose and simply resume the usual dosing schedule.

Elderly

There are limited data available on the use of dolutegravir in patients aged 65 years and over. There is no evidence that elderly patients require a different dose than younger adult patients.

Renal impairment

No dosage adjustment is required in patients with mild, moderate or severe (CrCl <30 mL/min, not on dialysis) renal impairment. No data are available in subjects receiving dialysis although differences in pharmacokinetics are not expected in this population.

Hepatic impairment

No dosage adjustment is required in patients with mild or moderate hepatic impairment (Child-Pugh grade A or B). No data are available in patients with severe hepatic impairment (Child-Pugh grade C); therefore dolutegravir should be used with caution in these patients.

Paediatric population

The safety and efficacy of dolutegravir in children aged less than 6 years or weighing less than 15 kg have not yet been established. In the presence of integrase inhibitor resistance, there are insufficient data to recommend a dose for dolutegravir in children and adolescents.

Method of administration

Oral use

Dolutegravir Sodium Tablets 50mg can be taken with or without food. In the presence of integrase class resistance, Dolutegravir Sodium Tablets 50mg should preferably be taken with food to enhance exposure (particularly in patients with Q148 mutations).

4.3 Contraindications

- Hypersensitivity to the active substance or to any of the excipients .
- Dolutegravir Sodium Tablets must not be administered concurrently with medicinal products with narrow therapeutic windows that are substrates of organic cation transporter 2 (OCT2), including but not limited to fampridine (also known as dalfampridine)

4.4 Special warnings and precautions for use

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.

Integrase class resistance of particular concern

The decision to use dolutegravir in the presence of integrase class resistance should take into account that the activity of dolutegravir is considerably compromised for viral strains harbouring Q148+ \geq 2 secondary mutations from G140A/C/S, E138A/K/T, L74I. To what extent dolutegravir provides added efficacy in the presence of such integrase class resistance is uncertain.

Hypersensitivity reactions

Hypersensitivity reactions have been reported with dolutegravir, and were characterized by rash, constitutional findings, and sometimes, organ dysfunction, including severe liver

reactions. Dolutegravir and other suspect agents should be discontinued immediately if signs or symptoms of hypersensitivity reactions develop (including, but not limited to, severe rash or rash accompanied by raised liver enzymes, fever, general malaise, fatigue, muscle or joint aches, blisters, oral lesions, conjunctivitis, facial oedema, eosinophilia, angioedema). Clinical status including liver aminotransferases and bilirubin should be monitored. Delay in stopping treatment with dolutegravir or other suspect active substances after the onset of hypersensitivity may result in a life-threatening allergic reaction.

Immune Reactivation Syndrome

In HIV-infected patients with severe immune deficiency at the time of institution of combination antiretroviral therapy (CART), an inflammatory reaction to asymptomatic or residual opportunistic pathogens may arise and cause serious clinical conditions, or aggravation of symptoms. Typically, such reactions have been observed within the first few weeks or months of initiation of CART. Relevant examples are cytomegalovirus retinitis, generalised and/or focal mycobacterial infections, and *Pneumocystis jirovecii* pneumonia. Any inflammatory symptoms should be evaluated and treatment instituted when necessary. Autoimmune disorders (such as Graves' disease) have also been reported to occur in the setting of immune reconstitution, however, the reported time to onset is more variable and these events can occur many months after initiation of treatment.

Liver biochemistry elevations consistent with immune reconstitution syndrome were observed in some hepatitis B and/or C co-infected patients at the start of dolutegravir therapy. Monitoring of liver biochemistries is recommended in patients with hepatitis B and/or C co-infection. Particular diligence should be applied in initiating or maintaining effective hepatitis B therapy (referring to treatment guidelines) when starting dolutegravir-based therapy in hepatitis B co-infected patients.

Opportunistic infections

Patients should be advised that dolutegravir or any other antiretroviral therapy does not cure HIV infection and that they 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.

Drug interactions

Factors that decrease dolutegravir exposure should be avoided in the presence of integrase class resistance. This includes co-administration with medicinal products that reduce dolutegravir exposure (e.g. magnesium/ aluminium-containing antacid, iron and calcium supplements, multivitamins and inducing agents, etravirine (without boosted

protease inhibitors), tipranavir/ritonavir, rifampicin, St. John's wort and certain anti-epileptic drugs).

Dolutegravir increased metformin concentrations. A dose adjustment of metformin should be considered when starting and stopping coadministration of dolutegravir with metformin, to maintain glycaemic control.

Metformin is eliminated renally and therefore it is of importance to monitor renal function when co-treated with dolutegravir. This combination may increase the risk for lactic acidosis in patients with moderate renal impairment (stage 3a creatinine clearance [CrCl] 45– 59 mL/min) and a cautious approach is recommended. Reduction of the metformin dose should be highly considered.

Osteonecrosis

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

Weight and metabolic parameters

An increase in weight and in levels of blood lipids and glucose may occur during antiretroviral therapy. Such changes may in part be linked to disease control and lifestyle. For lipids, there is in some cases evidence for a treatment effect, while for weight gain there is no strong evidence relating this to any particular treatment. For monitoring of blood lipids and glucose reference is made to established HIV treatment guidelines. Lipid disorders should be managed as clinically appropriate.

Lamivudine and dolutegravir

The two-drug regimen of dolutegravir 50 mg once daily and lamivudine 300 mg once daily was explored in two large randomized and blinded studies, GEMINI 1 and GEMINI 2 . This regimen is only suitable for the treatment of HIV-1 infection where there is no known or suspected resistance to the integrase inhibitor class, or to lamivudine.

4.5 Interaction with other medicinal products and other forms of interaction

Effect of other agents on the pharmacokinetics of dolutegravir

All factors that decrease dolutegravir exposure should be avoided in the presence of integrase class resistance.

Dolutegravir is eliminated mainly through metabolism by UGT1A1. Dolutegravir is also a substrate of UGT1A3, UGT1A9, CYP3A4, Pgp, and BCRP; therefore medicinal

products that induce those enzymes may decrease dolutegravir plasma concentration and reduce the therapeutic effect of dolutegravir. Co-administration of dolutegravir and other medicinal products that inhibit these enzymes may increase dolutegravir plasma concentration.

The absorption of dolutegravir is reduced by certain anti-acid agents

Effect of dolutegravir on the pharmacokinetics of other agents

In vivo, dolutegravir did not have an effect on midazolam, a CYP3A4 probe. Based on in vivo and/or in vitro data, dolutegravir is not expected to affect the pharmacokinetics of medicinal products that are substrates of any major enzyme or transporter such as CYP3A4, CYP2C9 and P-gp.

In vitro, dolutegravir inhibited the renal organic cation transporter 2 (OCT2) and multidrug and toxin extrusion transporter (MATE) 1. In vivo, a 10-14% decrease of creatinine clearance (secretory fraction is dependent on OCT2 and MATE-1 transport) was observed in patients. In vivo, dolutegravir may increase plasma concentrations of medicinal products in which excretion is dependent upon OCT2 or MATE-1 (e.g. dofetilide, metformin).

In vitro, dolutegravir inhibited the renal uptake transporters, organic anion transporters (OAT1) and OAT3. Based on the lack of effect on the in vivo pharmacokinetics of the OAT substrate tenofovir, in vivo inhibition of OAT1 is unlikely. Inhibition of OAT3 has not been studied in vivo. Dolutegravir may increase plasma concentrations of medical products in which excretion is dependent upon OAT3.

Established and theoretical interactions with selected antiretrovirals and non-antiretroviral medicinal products are listed in below Table.

Interaction table

Interactions between dolutegravir and co-administered medicinal products are listed in Table (increase is indicated as “↑”, decrease as “↓”, no change as “↔”, area under the concentration versus time curve as “AUC”, maximum observed concentration as “C_{max}”, concentration at end of dosing interval as “Cr”).

Medicinal products by therapeutic areas	Interaction Geometric mean change (%)	Recommendations concerning co-administration
HIV-1 Antiviral Agents		
<i>Non-nucleoside Reverse Transcriptase Inhibitors</i>		
Etravirine without boosted protease	Dolutegravir ↓ AUC ↓ 71%	Etravirine without boosted protease inhibitors decreased plasma

inhibitors	C_{max} ↓ 52% $C\tau$ ↓ 88% Etravirine ↔ (induction of UGT1A1 and CYP3A enzymes)	dolutegravir concentration. The recommended adult dose of dolutegravir is 50 mg twice daily when co-administered with etravirine without boosted protease inhibitors. In paediatric patients the weight-based once daily dose should be administered twice daily. Dolutegravir should not be used with etravirine without co-administration of atazanavir/ritonavir, darunavir/ritonavir or lopinavir/ritonavir in INI-resistant patients.
Lopinavir/ritonavir + etravirine	Dolutegravir ↔ AUC ↑ 11% C_{max} ↑ 7% $C\tau$ ↑ 28% LPV ↔ RTV ↔	No dose adjustment is necessary.
Darunavir/ritonavir + etravirine	Dolutegravir ↓ AUC ↓ 25% C_{max} ↓ 12% $C\tau$ ↓ 36% DRV ↔ RTV ↔	No dose adjustment is necessary.
Efavirenz	Dolutegravir ↓ AUC ↓ 57% C_{max} ↓ 39% $C\tau$ ↓ 75% Efavirenz ↔ (historical controls) (induction of UGT1A1 and CYP3A enzymes)	The recommended adult dose of dolutegravir is 50 mg twice daily when co-administered with efavirenz. In paediatric patients the weight-based once daily dose should be administered twice daily. In the presence of integrase class resistance alternative combinations

		that do not include efavirenz should be considered.
Nevirapine	Dolutegravir ↓ (Not studied, a similar reduction in exposure as observed with efavirenz is expected, due to induction)	The recommended adult dose of dolutegravir is 50 mg twice daily when co-administered with nevirapine. In paediatric patients the weight-based once daily dose should be administered twice daily. In the presence of integrase class resistance alternative combinations that do not include nevirapine should be considered.
Rilpivirine	Dolutegravir ↔ AUC ↑ 12% C _{max} ↑ 13% C _t ↑ 22% Rilpivirine ↔	No dose adjustment is necessary.
<i>Nucleoside Reverse Transcriptase Inhibitors</i>		
Tenofovir	Dolutegravir ↔ AUC ↑ 1% C _{max} ↓ 3% C _t ↓ 8% Tenofovir ↔	No dose adjustment is necessary.
<i>Protease Inhibitors</i>		
Atazanavir	Dolutegravir ↑ AUC ↑ 91% C _{max} ↑ 50% C _t ↑ 180% Atazanavir ↔ (historical controls) (inhibition of UGT1A1 and CYP3A enzymes)	No dose adjustment is necessary. Dolutegravir should not be dosed higher than 50 mg twice daily in combination with atazanavir due to lack of data.
Atazanavir/ritonavir	Dolutegravir ↑ AUC ↑ 62% C _{max} ↑ 34%	No dose adjustment is necessary. Dolutegravir should not be dosed higher than 50 mg twice daily in

	<p>C_{τ} ↑ 121%</p> <p>Atazanavir ↔</p> <p>Ritonavir ↔</p> <p>(inhibition of UGT1A1 and CYP3A enzymes)</p>	combination with atazanavir due to lack of data.
Tipranavir/ritonavir (TPV+RTV)	<p>Dolutegravir ↓</p> <p>AUC ↓ 59%</p> <p>C_{\max} ↓ 47%</p> <p>C_{τ} ↓ 76%</p> <p>(induction of UGT1A1 and CYP3A enzymes)</p>	The recommended adult dose of dolutegravir is 50 mg twice daily when co-administered with tipranavir/ritonavir. In paediatric patients the weight-based once daily dose should be administered twice daily. In the presence of integrase class resistance this combination should be avoided.
Fosamprenavir/ritonavir (FPV+RTV)	<p>Dolutegravir ↓</p> <p>AUC ↓ 35%</p> <p>C_{\max} ↓ 24%</p> <p>C_{τ} ↓ 49%</p> <p>(induction of UGT1A1 and CYP3A enzymes)</p>	No dose adjustment is necessary in the absence of integrase class resistance. In the presence of integrase class resistance alternative combinations that do not include fosamprenavir/ritonavir should be considered.
Darunavir/ritonavir	<p>Dolutegravir ↓</p> <p>AUC ↓ 22%</p> <p>C_{\max} ↓ 11%</p> <p>C_{24} ↓ 38%</p> <p>(induction of UGT1A1 and CYP3A enzymes)</p>	No dose adjustment is necessary.
Lopinavir/ritonavir	<p>Dolutegravir ↔</p> <p>AUC ↓ 4%</p> <p>C_{\max} ↔ 0%</p> <p>C_{24} ↓ 6%</p>	No dose adjustment is necessary.
Other Antiviral agents		
Daclatasvir	<p>Dolutegravir ↔</p> <p>AUC ↑ 33%</p> <p>C_{\max} ↑ 29%</p>	Daclatasvir did not change dolutegravir plasma concentration to a clinically relevant extent.

	C _t ↑ 45% Daclatasvir ↔	Dolutegravir did not change daclatasvir plasma concentration. No dose adjustment is necessary.
Other agents		
<i>Potassium channel blocker</i>		
Fampridine (also known as dalfampridine)	Fampridine↑	Co-administration of dolutegravir has the potential to cause seizures due to increased fampridine plasma concentration via inhibition of OCT2 transporter; co-administration has not been studied. Fampridine co-administration with dolutegravir is contraindicated.
<i>Anticonvulsants</i>		
Carbamazepine	Dolutegravir ↓ AUC ↓ 49% C _{max} ↓ 33% C _t ↓ 73%	The recommended adult dose of dolutegravir is 50 mg twice daily when co-administered with carbamazepine. In paediatric patients the weight-based once daily dose should be administered twice daily. Alternatives to carbamazepine should be used where possible for INI resistant patients.
Oxcarbazepine Phenytoin Phenobarbital	Dolutegravir ↓ (Not studied, decrease expected due to induction of UGT1A1 and CYP3A enzymes, a similar reduction in exposure as observed with carbamazepine is expected)	The recommended adult dose of dolutegravir is 50 mg twice daily when co-administered with these metabolic inducers. In paediatric patients the weight-based once daily dose should be administered twice daily. Alternative combinations that do not include these metabolic inducers should be used where possible in INI-resistant patients.
<i>Azole anti-fungal agents</i>		

Ketoconazole Fluconazole Itraconazole Posaconazole Voriconazole	Dolutegravir ↔ (Not studied)	No dose adjustment is necessary. Based on data from other CYP3A4 inhibitors, a marked increase is not expected.
<i>Herbal products</i>		
St. John's wort	Dolutegravir ↓ (Not studied, decrease expected due to induction of UGT1A1 and CYP3A enzymes, a similar reduction in exposure as observed with carbamazepine is expected)	The recommended adult dose of dolutegravir is 50 mg twice daily when co-administered with St. John's wort. In paediatric patients the weight-based once daily dose should be administered twice daily. Alternative combinations that do not include St. John's wort should be used where possible in INI-resistant patients.
<i>Antacids and supplements</i>		
Magnesium/ aluminium- containing antacid	Dolutegravir ↓ AUC ↓ 74% C _{max} ↓ 72% (Complex binding to polyvalent ions)	Magnesium/ aluminium-containing antacid should be taken well separated in time from the administration of dolutegravir (minimum 2 hours after or 6 hours before).
Calcium supplements	Dolutegravir ↓ AUC ↓ 39% C _{max} ↓ 37% C ₂₄ ↓ 39% (Complex binding to polyvalent ions)	Calcium supplements, iron supplements or multivitamins should be taken well separated in time from the administration of dolutegravir (minimum 2 hours after or 6 hours before).
Iron supplements	Dolutegravir ↓ AUC ↓ 54% C _{max} ↓ 57% C ₂₄ ↓ 56% (Complex binding to polyvalent ions)	

Multivitamin	Dolutegravir ↓ AUC ↓ 33% C _{max} ↓ 35% C ₂₄ ↓ 32% (Complex binding to polyvalent ions)	
<i>Corticosteroids</i>		
Prednisone	Dolutegravir ↔ AUC ↑ 11% C _{max} ↑ 6% C _t ↑ 17%	No dose adjustment is necessary.
<i>Antidiabetics</i>		
Metformin	Metformin ↑ When co-administered with dolutegravir 50mg once daily: Metformin AUC ↑ 79% C _{max} ↑ 66% When co-administered with dolutegravir 50mg twice daily: Metformin AUC ↑ 145 % C _{max} ↑ 111%	A dose adjustment of metformin should be considered when starting and stopping coadministration of dolutegravir with metformin, to maintain glycaemic control. In patients with moderate renal impairment a dose adjustment of metformin should be considered when coadministered with dolutegravir, because of the increased risk for lactic acidosis in patients with moderate renal impairment due to increased metformin concentration .
<i>Antimycobacterials</i>		
Rifampicin	Dolutegravir ↓ AUC ↓ 54% C _{max} ↓ 43% C _t ↓ 72% (induction of UGT1A1 and CYP3A enzymes)	The recommended adult dose of dolutegravir is 50 mg twice daily when co-administered with rifampicin in the absence of integrase class resistance. In paediatric patients the weight-based once daily dose should be administered twice daily.

		In the presence of integrase class resistance this combination should be avoided .
Rifabutin	Dolutegravir ↔ AUC ↓ 5% C _{max} ↑ 16% C _t ↓ 30% (induction of UGT1A1 and CYP3A enzymes)	No dose adjustment is necessary.
<i>Oral contraceptives</i>		
Ethinyl estradiol (EE) and Norelgestromin (NGMN)	Dolutegravir ↔ EE ↔ AUC ↑ 3% C _{max} ↓ 1% NGMN ↔ AUC ↓ 2% C _{max} ↓ 11%	Dolutegravir had no pharmacodynamic effect on Luteinizing Hormone (LH), Follicle Stimulating Hormone (FSH) and progesterone. No dose adjustment of oral contraceptives is necessary when co-administered with dolutegravir.
<i>Analgesics</i>		
Methadone	Dolutegravir ↔ Methadone ↔ AUC ↓ 2% C _{max} ↔ 0% C _t ↓ 1%	No dose adjustment is necessary of either agent.

Paediatric population

Interaction studies have only been performed in adults.

4.6 Pregnancy and Lactation

Pregnancy

If a pregnancy is confirmed in the first trimester while on dolutegravir, the benefits and risks of continuing dolutegravir versus switching to another antiretroviral regimen should be discussed with the patient taking the gestational age and the critical time period of neural tube defect development into account.

Data analysed from the Antiretroviral Pregnancy Registry do not indicate an increased risk of major birth defects in over 600 women exposed to dolutegravir during pregnancy but are currently insufficient to address the risk of neural tube defects.

In animal reproductive toxicity studies, no adverse development outcomes, including neural tube defects, were identified . Dolutegravir was shown to cross the placenta in animals.

More than 1000 outcomes from exposure during second and third trimester of pregnancy indicate no evidence of increased risk of foeto/neonatal toxicity. Dolutegravir may be used during the second and third trimester of pregnancy when the expected benefit justifies the potential risk to the foetus.

Lactation

It is unknown whether dolutegravir is excreted in human milk. Available toxicological data in animals has shown excretion of dolutegravir in milk. In lactating rats that received a single oral dose of 50 mg/kg at 10 days postpartum, dolutegravir was detected in milk at concentrations typically higher than blood. It is recommended that HIV infected women do not breast-feed their infants under any circumstances in order to avoid transmission of HIV.

4.7 Effects on ability to drive and use machines

Patients should be informed that dizziness has been reported during treatment with dolutegravir. The clinical status of the patient and the adverse reaction profile of dolutegravir should be borne in mind when considering the patient's ability to drive or operate machinery.

4.8 Undesirable effects

The adverse reactions considered at least possibly related to dolutegravir are listed by body system, organ class and absolute frequency. Frequencies are defined as very common ($\geq 1/10$), common ($\geq 1/100$ to $< 1/10$), uncommon ($\geq 1/1,000$ to $< 1/100$), rare ($\geq 1/10,000$ to $< 1/1,000$), very rare ($< 1/10,000$).

Immune system disorders	Uncommon	Hypersensitivity
	Uncommon	Immune Reconstitution Syndrome
Psychiatric disorders	Common	Insomnia
	Common	Abnormal dreams
	Common	Depression
	Common	Anxiety
	Uncommon	Suicidal ideation*, suicide attempt* *particularly in patients with a pre-existing history of depression or psychiatric illness.
Nervous system	Very common	Headache

disorders	Common	Dizziness
Gastrointestinal disorders	Very common	Nausea
	Very common	Diarrhoea
	Common	Vomiting
	Common	Flatulence
	Common	Upper abdominal pain
	Common	Abdominal pain
	Common	Abdominal discomfort
Hepatobiliary disorders	Uncommon	Hepatitis
	Rare	Acute hepatic failure
Skin and subcutaneous tissue disorders	Common	Rash
	Common	Pruritus
Musculoskeletal and connective tissue disorders	Uncommon	Arthralgia
	Uncommon	Myalgia
General disorders and administration site conditions	Common	Fatigue
Investigations	Common	Alanine aminotransferase (ALT) and/or Aspartate aminotransferase (AST) elevations
	Common	Creatine phosphokinase (CPK) elevations

**see below under Description of selected adverse reactions.

Description of selected adverse reactions

Changes in laboratory biochemistries

Increases in serum creatinine occurred within the first week of treatment with dolutegravir and remained stable through 48 weeks. A mean change from baseline of 9.96 µmol/L was observed after 48 weeks of treatment. Creatinine increases were comparable by various background regimens. These changes are not considered to be clinically relevant since they do not reflect a change in glomerular filtration rate.

Co-infection with Hepatitis B or C

In Phase III studies patients with hepatitis B and/or C co-infection were permitted to enrol provided that baseline liver chemistry tests did not exceed 5 times the upper limit of normal (ULN). Overall, the safety profile in patients co-infected with hepatitis B and/or C was similar to that observed in patients without hepatitis B or C co-infection, although the rates of AST and ALT abnormalities were higher in the subgroup with hepatitis B and/or C co-infection for all treatment groups. Liver chemistry elevations consistent with immune reconstitution syndrome were observed in some subjects with hepatitis B and/or C co-infection at the start of dolutegravir therapy, particularly in those whose anti-hepatitis B therapy was withdrawn.

Immune reactivation syndrome

In HIV-infected patients with severe immune deficiency at the time of initiation of combination antiretroviral therapy (CART), an inflammatory reaction to asymptomatic or residual opportunistic infections may arise. Autoimmune disorders (such as Graves' disease and autoimmune hepatitis) have also been reported; however, the reported time to onset is more variable and these events can occur many months after initiation of treatment

Metabolic parameters

Weight and levels of blood lipids and glucose may increase during antiretroviral therapy.

Paediatric population

Based on limited available data in children and adolescents (6 to less than 18 years of age and weighing at least 15 kg), there were no additional types of adverse reactions beyond those observed in the adult population.

4.9 Overdose

There is currently limited experience with overdosage in dolutegravir.

Limited experience of single higher doses (up to 250 mg in healthy subjects) revealed no specific symptoms or signs, apart from those listed as adverse reactions.

Further management should be as clinically indicated or as recommended by the national poisons centre, where available. There is no specific treatment for an overdose of dolutegravir. If overdose occurs, the patient should be treated supportively with appropriate monitoring, as necessary. As dolutegravir is highly bound to plasma proteins, it is unlikely that it will be significantly removed by dialysis.

5. Pharmacological Properties

5.1 Pharmacodynamic properties

Mechanism of action:

Dolutegravir inhibits HIV integrase by binding to the integrase active site and blocking the strand transfer step of retroviral Deoxyribonucleic acid (DNA) integration which is essential for the HIV replication cycle.

5.2 Pharmacokinetic properties

Absorption:

Dolutegravir is rapidly absorbed following oral administration, with median T_{max} at 2 to 3 hours post dose for tablet formulation.

Food increased the extent and slowed the rate of absorption of dolutegravir. Bioavailability of dolutegravir depends on meal content: low, moderate, and high fat meals increased dolutegravir AUC_(0-∞) by 33%, 41%, and 66%, increased C_{max} by 46%, 52%, and 67%, prolonged T_{max} to 3, 4, and 5 hours from 2 hours under fasted conditions, respectively.

These increases may be clinically relevant in the presence of certain integrase class resistance. Therefore, Dolutegravir Sodium Tablets 50 mg is recommended to be taken with food by patients infected with HIV with integrase class resistance.

The absolute bioavailability of dolutegravir has not been established.

Distribution:

Dolutegravir is highly bound (>99%) to human plasma proteins based on in vitro data. The apparent volume of distribution is 17L to 20L in HIV-infected patients, based on a population pharmacokinetic analysis. Binding of dolutegravir to plasma proteins is independent of dolutegravir concentration. Total blood and plasma drug-related radioactivity concentration ratios averaged between 0.441 to 0.535, indicating minimal association of radioactivity with blood cellular components. The unbound fraction of dolutegravir in plasma is increased at low levels of serum albumin (<35 g/L) as seen in subjects with moderate hepatic impairment.

Dolutegravir is present in cerebrospinal fluid (CSF). In 13 treatment-naïve subjects on a stable dolutegravir plus abacavir/lamivudine regimen, dolutegravir concentration in CSF averaged 18ng/mL (comparable to unbound plasma concentration, and above the IC₅₀).

Dolutegravir is present in the female and male genital tract. AUC in cervicovaginal fluid, cervical tissue and vaginal tissue were 6-10% of those in corresponding plasma at steady state. AUC in semen was 7% and 17% in rectal tissue of those in corresponding plasma at steady state.

Biotransformation

Dolutegravir is primarily metabolized through glucuronidation via UGT1A1 with a minor CYP3A component. Dolutegravir is the predominant circulating compound in plasma; renal elimination of unchanged active substance is low (< 1% of the dose). Fifty-three percent of total oral dose is excreted unchanged in the faeces. It is unknown if all or part of this is due to unabsorbed active substance or biliary excretion of the glucuronidate conjugate, which can be further degraded to form the parent compound in the gut lumen. Thirty-two percent of the total oral dose is excreted in the urine, represented by ether glucuronide of dolutegravir (18.9% of total dose), N-dealkylation metabolite (3.6% of total dose), and a metabolite formed by oxidation at the benzylic carbon (3.0% of total dose).

Elimination

Dolutegravir has a terminal half-life of ~14 hours. The apparent oral clearance (CL/F) is approximately 1L/hr in HIV-infected patients based on a population pharmacokinetic analysis.

5.3 Preclinical safety data

Dolutegravir was not mutagenic or clastogenic using *in vitro* tests in bacteria and cultured mammalian cells, and an *in vivo* rodent micronucleus assay. Dolutegravir was not carcinogenic in long term studies in the mouse and rat.

Dolutegravir did not affect male or female fertility in rats at doses up to 1000 mg/kg/day, the highest dose tested (24 times the 50 mg twice daily human clinical exposure based on AUC).

Oral administration of dolutegravir to pregnant rats at doses up to 1000 mg/kg daily from days 6 to 17 of gestation did not elicit maternal toxicity, developmental toxicity or teratogenicity (27 times the 50 mg twice daily human clinical exposure based on AUC).

Oral administration of dolutegravir to pregnant rabbits at doses up to 1000 mg/kg daily from days 6 to 18 of gestation did not elicit developmental toxicity or teratogenicity (0.40 times the 50 mg twice daily human clinical exposure based on AUC). In rabbits, maternal toxicity (decreased food consumption, scant/no faeces/urine, suppressed body weight gain) was observed at 1000 mg/kg (0.40 times the 50 mg twice daily human clinical exposure based on AUC).

The effect of prolonged daily treatment with high doses of dolutegravir has been evaluated in repeat oral dose toxicity studies in rats (up to 26 weeks) and in monkeys (up to 38 weeks). The primary effect of dolutegravir was gastrointestinal intolerance or irritation in rats and monkeys at doses that produce systemic exposures approximately 21 and 0.82 times the 50 mg twice daily human clinical exposure based on AUC,

respectively. Because gastrointestinal (GI) intolerance is considered to be due to local active substance administration, mg/kg or mg/m² metrics are appropriate determinates of safety cover for this toxicity. GI intolerance in monkeys occurred at 15 times the human mg/kg equivalent dose (based on a 50 kg human), and 5 times the human mg/m² equivalent dose for a clinical dose of 50 mg twice daily.

6. Pharmaceutical Particulars

6.1 List of Excipients

Mannitol, Microcrystalline Cellulose (PH 101), Sodium Starch Glycolate (Type A), Povidone, Sodium Stearyl Fumarate, Opadry II Pink (85F540358), Purified Water

6.2 Incompatibilities

None

6.3 Shelf life

24 months

6.4 Special precautions for storage

Store below 30°C in dry place, protect from light.

6.5 Nature and contents of container

HDPE Container pack of 30's

6.6 Special Precaution for disposal

None

7. Supplier

Macleods Pharmaceuticals Ltd.

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- 8. Who Reference Number (Prequalification Programme)**
- 9. Date of first Prequalification/ last renewal**
- 10. Date of Revision of the Text:**

References:

<https://www.medicines.org.uk/emc/product/10057/smpc>

