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## SUMMARY OF PRODUCT CHARACTERISTIC (SPC)

### **THROMBAN 2.5/5** (Apixaban Tablets 2.5mg/5mg)

#### **1. NAME OF THE MEDICINAL PRODUCT**

##### **1.1 Name of the medicinal product**

Thromban 2.5/5 (Apixaban Tablets 2.5mg/5mg)

##### **1.2 Strength**

2.5mg/5mg

##### **1.3 Pharmaceutical Form**

Film coated tablets

#### **2. QUALITATIVE AND QUANTITATIVE COMPOSITION**

##### **THROMBAN 2.5**

Apixaban Tablets 2.5mg

Each film coated tablet contains:

Apixaban 2.5mg

Colour: Titanium Dioxide

##### **THROMBAN 5**

Apixaban Tablets 5mg

Each film coated tablet contains:

Apixaban 5mg

Colours: Titanium Dioxide, Iron Oxide Yellow, Iron Oxide Red

For full list excipients, see section 6.1

#### **3. PHARMACEUTICAL FORM**

**Apixaban Tablets 2.5mg:** White to off white colored, round shaped, film coated tablet, debossed with “Z46” on one side and plain on the other side.

**Apixaban Tablets 5mg:** Beige colored, oval shaped, film coated tablet, debossed with “Z47” on one side and plain on the other side.

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## **4. CLINICAL PARTICULARS**

### **4.1 Therapeutic indications**

Prevention of venous thromboembolic events (VTE) in adult patients.

Prevention of stroke and systemic embolism in adult patients with non-valvular atrial fibrillation (NVAF), with one or more risk factors, such as prior stroke or transient ischaemic attack (TIA); age  $\geq 75$  years; hypertension; diabetes mellitus; symptomatic heart failure (NYHA Class  $\geq$  II).

Treatment of deep vein thrombosis (DVT) and pulmonary embolism (PE), and prevention of recurrent DVT and PE in adults.

### **4.2 Posology and method of administration**

#### **Posology**

##### *Prevention of VTE (VTEp): elective hip or knee replacement surgery*

The recommended dose of apixaban is 2.5 mg taken orally twice daily. The initial dose should be taken 12 to 24 hours after surgery.

Physicians may consider the potential benefits of earlier anticoagulation for VTE prophylaxis as well as the risks of post-surgical bleeding in deciding on the time of administration within this time window.

##### *In patients undergoing hip replacement surgery*

The recommended duration of treatment is 32 to 38 days.

##### *In patients undergoing knee replacement surgery*

The recommended duration of treatment is 10 to 14 days.

##### *Prevention of stroke and systemic embolism in patients with non-valvular atrial fibrillation (NVAF)*

The recommended dose of apixaban is 5 mg taken orally twice daily.

##### *Dose reduction*

The recommended dose of apixaban is 2.5 mg taken orally twice daily in patients with NVAF and at least two of the following characteristics: age  $\geq 80$  years, body weight  $\leq 60$  kg, or serum creatinine  $\geq 1.5$  mg/dL (133 micromole/L).

Therapy should be continued long-term.

##### *Treatment of DVT, treatment of PE and prevention of recurrent DVT and PE (VTEt)*

The recommended dose of apixaban for the treatment of acute DVT and treatment of PE is 10 mg taken orally twice daily for the first 7 days followed by 5 mg taken orally twice daily. As per available medical guidelines, short duration of treatment (at least 3 months) should be based on transient risk factors (e.g., recent surgery, trauma, immobilisation).

The recommended dose of apixaban for the prevention of recurrent DVT and PE is 2.5 mg taken orally twice daily. When prevention of recurrent DVT and PE is indicated, the 2.5 mg

twice daily dose should be initiated following completion of 6 months of treatment with apixaban 5 mg twice daily or with another anticoagulant, as indicated in below table.

Table 1:

	Dosing schedule	Maximum daily dose
Treatment of DVT or PE	10 mg twice daily for the first 7 days	20 mg
	followed by 5 mg twice daily	10 mg
Prevention of recurrent DVT and/or PE following completion of 6 months of treatment for DVT or PE	2.5 mg twice daily	5 mg

The duration of overall therapy should be individualised after careful assessment of the treatment benefit against the risk for bleeding.

#### Missed dose

If a dose is missed, the patient should take Apixaban Tablets immediately and then continue with twice daily intake as before.

#### Switching

Switching treatment from parenteral anticoagulants to Apixaban Tablets (and vice versa) can be done at the next scheduled dose. These medicinal products should not be administered simultaneously.

#### *Switching from vitamin K antagonist (VKA) therapy to Apixaban Tablets*

When converting patients from vitamin K antagonist (VKA) therapy to Apixaban Tablets, warfarin or other VKA therapy should be discontinued and Apixaban Tablets started when the international normalised ratio (INR) is < 2.

#### *Switching from Apixaban Tablets to VKA therapy*

When converting patients from Apixaban Tablets to VKA therapy, administration of Apixaban Tablets should be continued for at least 2 days after beginning VKA therapy. After 2 days of coadministration of Apixaban Tablets with VKA therapy, an INR should be obtained prior to the next scheduled dose of Apixaban Tablets. Coadministration of Apixaban Tablets and VKA therapy should be continued until the INR is  $\geq 2$ .

#### Renal impairment

In patients with mild or moderate renal impairment, the following recommendations apply:

- for the prevention of VTE in elective hip or knee replacement surgery (VTEp), for the treatment of DVT, treatment of PE and prevention of recurrent DVT and PE (VTEt), no dose adjustment is necessary.
- for the prevention of stroke and systemic embolism in patients with NVAf and serum creatinine  $\geq 1.5$  mg/dL (133 micromole/L) associated with age  $\geq 80$  years or body weight  $\leq 60$  kg, a dose reduction is necessary and described above. In the absence of other criteria for dose reduction (age, body weight), no dose adjustment is necessary.

In patients with severe renal impairment (creatinine clearance 15-29 mL/min) the following recommendations apply:

- for the prevention of VTE in elective hip or knee replacement surgery (VTEp), for the treatment of DVT, treatment of PE and prevention of recurrent DVT and PE (VTEt) apixaban is to be used with caution;
- for the prevention of stroke and systemic embolism in patients with NVAf, patients should receive the lower dose of apixaban 2.5 mg twice daily.

In patients with creatinine clearance < 15 mL/min, or in patients undergoing dialysis, there is no clinical experience therefore apixaban is not recommended.

#### Hepatic impairment

Apixaban Tablets is contraindicated in patients with hepatic disease associated with coagulopathy and clinically relevant bleeding risk.

It is not recommended in patients with severe hepatic impairment.

It should be used with caution in patients with mild or moderate hepatic impairment (Child Pugh A or B). No dose adjustment is required in patients with mild or moderate hepatic impairment.

Patients with elevated liver enzymes alanine aminotransferase (ALT)/aspartate aminotransferase (AST) >2 x ULN or total bilirubin  $\geq$  1.5 x ULN were excluded in clinical trials. Therefore Apixaban Tablets should be used with caution in this population. Prior to initiating Apixaban Tablets, liver function testing should be performed.

#### Body weight

VTEp and VTEt - No dose adjustment required.

NVAf - No dose adjustment required, unless criteria for dose reduction are met.

#### Gender

No dose adjustment required.

#### Elderly

VTEp and VTEt – No dose adjustment required.

NVAf – No dose adjustment required, unless criteria for dose reduction are met.

#### Patients undergoing cardioversion

Apixaban can be initiated or continued in NVAf patients who may require cardioversion.

For patients not previously treated with anticoagulants, at least 5 doses of apixaban 5 mg twice daily (2.5 mg twice daily in patients who qualify for a dose reduction) should be given before cardioversion to ensure adequate anticoagulation.

If cardioversion is required before 5 doses of apixaban can be administered, a 10 mg loading dose should be given, followed by 5 mg twice daily. The dosing regimen should be reduced to a 5 mg loading dose followed by 2.5 mg twice daily if the patient meets the criteria for dose reduction. The administration of the loading dose should be given at least 2 hours before cardioversion.

Confirmation should be sought prior to cardioversion that the patient has taken apixaban as prescribed. Decisions on initiation and duration of treatment should take established guideline recommendations for anticoagulant treatment in patients undergoing cardioversion into account.

#### Paediatric population

The safety and efficacy of Apixaban Tablets in children and adolescents below age 18 have not been established. No data are available.

#### **Method of administration**

Oral use

Apixaban Tablets should be swallowed with water, with or without food.

For patients who are unable to swallow whole tablets, Apixaban Tablets tablets may be crushed and suspended in water, or 5% dextrose in water (D5W), or apple juice or mixed with apple puree and immediately administered orally. Alternatively, Apixaban Tablets tablets may be crushed and suspended in 60 mL of water or D5W and immediately delivered through a nasogastric tube.

Crushed Apixaban Tablets tablets are stable in water, D5W, apple juice, and apple puree for up to 4 hours.

#### **4.3 Contraindications**

- Hypersensitivity to the active substance or to any of the excipients.
- Active clinically significant bleeding.
- Hepatic disease associated with coagulopathy and clinically relevant bleeding risk.
- Lesion or condition if considered a significant risk factor for major bleeding. This may include current or recent gastrointestinal ulceration, presence of malignant neoplasms at high risk of bleeding, recent brain or spinal injury, recent brain, spinal or ophthalmic surgery, recent intracranial haemorrhage, known or suspected oesophageal varices, arteriovenous malformations, vascular aneurysms or major intraspinal or intracerebral vascular abnormalities.
- Concomitant treatment with any other anticoagulant agent e.g., unfractionated heparin (UFH), low molecular weight heparins (enoxaparin, dalteparin, etc.), heparin derivatives (fondaparinux, etc.), oral anticoagulants (warfarin, rivaroxaban, dabigatran, etc.) except under specific circumstances of switching anticoagulant therapy or when UFH is given at doses necessary to maintain an open central venous or arterial catheter.

#### **4.4 Special warnings and precautions for use**

##### Haemorrhage risk

As with other anticoagulants, patients taking Apixaban Tablets are to be carefully observed for signs of bleeding. It is recommended to be used with caution in conditions with increased

risk of haemorrhage. Apixaban Tablets administration should be discontinued if severe haemorrhage occurs.

Although treatment with apixaban does not require routine monitoring of exposure, a calibrated quantitative anti-Factor Xa assay may be useful in exceptional situations where knowledge of apixaban exposure may help to inform clinical decisions, e.g., overdose and emergency surgery.

#### Interaction with other medicinal products affecting haemostasis

Due to an increased bleeding risk, concomitant treatment with any other anticoagulants is contraindicated.

The concomitant use of Apixaban Tablets with antiplatelet agents increases the risk of bleeding.

Care is to be taken if patients are treated concomitantly with selective serotonin reuptake inhibitors (SSRIs) or serotonin norepinephrine reuptake inhibitors (SNRIs), or non-steroidal anti-inflammatory drugs (NSAIDs), including acetylsalicylic acid.

Following surgery, other platelet aggregation inhibitors are not recommended concomitantly with Apixaban Tablets.

In patients with atrial fibrillation and conditions that warrant mono or dual antiplatelet therapy, a careful assessment of the potential benefits against the potential risks should be made before combining this therapy with Apixaban Tablets.

#### Use of thrombolytic agents for the treatment of acute ischemic stroke

There is very limited experience with the use of thrombolytic agents for the treatment of acute ischemic stroke in patients administered apixaban.

#### Patients with prosthetic heart valves

Safety and efficacy of Apixaban Tablets have not been studied in patients with prosthetic heart valves, with or without atrial fibrillation. Therefore, the use of Apixaban Tablets is not recommended in this setting.

#### Surgery and invasive procedures

Apixaban Tablets should be discontinued at least 48 hours prior to elective surgery or invasive procedures with a moderate or high risk of bleeding. This includes interventions for which the probability of clinically significant bleeding cannot be excluded or for which the risk of bleeding would be unacceptable.

Apixaban Tablets should be discontinued at least 24 hours prior to elective surgery or invasive procedures with a low risk of bleeding. This includes interventions for which any bleeding that occurs is expected to be minimal, non-critical in its location or easily controlled. If surgery or invasive procedures cannot be delayed, appropriate caution should be exercised, taking into consideration an increased risk of bleeding. This risk of bleeding should be weighed against the urgency of intervention.

Apixaban Tablets should be restarted after the invasive procedure or surgical intervention as soon as possible provided the clinical situation allows and adequate haemostasis has been established.

#### Temporary discontinuation

Discontinuing anticoagulants, including Apixaban Tablets, for active bleeding, elective surgery, or invasive procedures places patients at an increased risk of thrombosis. Lapses in therapy should be avoided and if anticoagulation with Apixaban Tablets must be temporarily discontinued for any reason, therapy should be restarted as soon as possible.

#### Spinal/epidural anaesthesia or puncture

When neuraxial anaesthesia (spinal/epidural anaesthesia) or spinal/epidural puncture is employed, patients treated with antithrombotic agents for prevention of thromboembolic complications are at risk of developing an epidural or spinal haematoma which can result in long-term or permanent paralysis. The risk of these events may be increased by the post-operative use of indwelling epidural catheters or the concomitant use of medicinal products affecting haemostasis. Indwelling epidural or intrathecal catheters must be removed at least 5 hours prior to the first dose of Apixaban Tablets. The risk may also be increased by traumatic or repeated epidural or spinal puncture. Patients are to be frequently monitored for signs and symptoms of neurological impairment (e.g., numbness or weakness of the legs, bowel or bladder dysfunction). If neurological compromise is noted, urgent diagnosis and treatment is necessary. Prior to neuraxial intervention the physician should consider the potential benefit versus the risk in anticoagulated patients or in patients to be anticoagulated for thromboprophylaxis.

There is no clinical experience with the use of apixaban with indwelling intrathecal or epidural catheters. In case there is such need and based on the general PK characteristics of apixaban, a time interval of 20-30 hours (i.e., 2 x half-life) between the last dose of apixaban and catheter withdrawal should elapse, and at least one dose should be omitted before catheter withdrawal. The next dose of apixaban may be given at least 5 hours after catheter removal. As with all new anticoagulant medicinal products, experience with neuraxial blockade is limited and extreme caution is therefore recommended when using apixaban in the presence of neuraxial blockade.

#### Haemodynamically unstable PE patients or patients who require thrombolysis or pulmonary embolectomy

Apixaban Tablets is not recommended as an alternative to unfractionated heparin in patients with pulmonary embolism who are haemodynamically unstable or may receive thrombolysis or pulmonary embolectomy since the safety and efficacy of apixaban have not been established in these clinical situations.

#### Patients with active cancer

Efficacy and safety of apixaban in the treatment of DVT, treatment of PE and prevention of recurrent DVT and PE (VTET) in patients with active cancer have not been established.

#### Patients with renal impairment

Limited clinical data indicate that apixaban plasma concentrations are increased in patients with severe renal impairment (creatinine clearance 15-29 mL/min) which may lead to an increased bleeding risk. For the prevention of VTE in elective hip or knee replacement surgery (VTEp), the treatment of DVT, treatment of PE and prevention of recurrent DVT and PE (VTEt), apixaban is to be used with caution in patients with severe renal impairment (creatinine clearance 15-29 mL/min).

For the prevention of stroke and systemic embolism in patients with NVAF, patients with severe renal impairment (creatinine clearance 15-29 mL/min), and patients with serum creatinine  $\geq 1.5$  mg/dL (133 micromole/L) associated with age  $\geq 80$  years or body weight  $\leq 60$  kg should receive the lower dose of apixaban 2.5 mg twice daily.

In patients with creatinine clearance  $< 15$  mL/min, or in patients undergoing dialysis, there is no clinical experience therefore apixaban is not recommended.

#### Elderly patients

Increasing age may increase haemorrhagic risk.

Also, the coadministration of Apixaban Tablets with ASA in elderly patients should be used cautiously because of a potentially higher bleeding risk.

#### Body weight

Low body weight ( $< 60$  kg) may increase haemorrhagic risk.

#### Patients with hepatic impairment

Apixaban Tablets is contraindicated in patients with hepatic disease associated with coagulopathy and clinically relevant bleeding risk.

It is not recommended in patients with severe hepatic impairment.

It should be used with caution in patients with mild or moderate hepatic impairment (Child Pugh A or B).

Patients with elevated liver enzymes ALT/AST  $> 2$  x ULN or total bilirubin  $\geq 1.5$  x ULN were excluded in clinical trials. Therefore Apixaban Tablets should be used cautiously in this population. Prior to initiating Apixaban Tablets, liver function testing should be performed.

#### Interaction with inhibitors of both cytochrome P450 3A4 (CYP3A4) and P-glycoprotein (P-gp)

The use of Apixaban Tablets is not recommended in patients receiving concomitant systemic treatment with strong inhibitors of both CYP3A4 and P-gp, such as azole-antimycotics (e.g., ketoconazole, itraconazole, voriconazole and posaconazole) and HIV protease inhibitors (e.g., ritonavir). These medicinal products may increase apixaban exposure by 2-fold, or greater in the presence of additional factors that increase apixaban exposure (e.g., severe renal impairment).

#### Interaction with inducers of both CYP3A4 and P-gp



The concomitant use of Apixaban Tablets with strong CYP3A4 and P-gp inducers (e.g., rifampicin, phenytoin, carbamazepine, phenobarbital or St. John's Wort) may lead to a ~50% reduction in apixaban exposure. In a clinical study in atrial fibrillation patients, diminished efficacy and a higher risk of bleeding were observed with coadministration of apixaban with strong inducers of both CYP3A4 and P-gp compared with using apixaban alone.

In patients receiving concomitant systemic treatment with strong inducers of both CYP3A4 and P-gp the following recommendations apply:

- for the prevention of VTE in elective hip or knee replacement surgery, for the prevention of stroke and systemic embolism in patients with NVAF and for the prevention of recurrent DVT and PE, apixaban should be used with caution;
- for the treatment of DVT and treatment of PE, apixaban should not be used since efficacy may be compromised.

#### Hip fracture surgery

Apixaban has not been studied in clinical trials in patients undergoing hip fracture surgery to evaluate efficacy and safety in these patients. Therefore, it is not recommended in these patients.

#### Laboratory parameters

Clotting tests [e.g., prothrombin time (PT), INR, and activated partial thromboplastin time (aPTT)] are affected as expected by the mechanism of action of apixaban. Changes observed in these clotting tests at the expected therapeutic dose are small and subject to a high degree of variability.

#### Information about excipients

Apixaban Tablets contains lactose. Patients with rare hereditary problems of galactose intolerance, the Lapp lactase deficiency or glucose-galactose malabsorption should not take this medicinal product.

### **4.5 Interaction with other medicinal products and other forms of interaction**

#### Inhibitors of CYP3A4 and P-gp

Coadministration of apixaban with ketoconazole (400 mg once a day), a strong inhibitor of both CYP3A4 and P-gp, led to a 2-fold increase in mean apixaban AUC and a 1.6-fold increase in mean apixaban  $C_{max}$ .

The use of Apixaban Tablets is not recommended in patients receiving concomitant systemic treatment with strong inhibitors of both CYP3A4 and P-gp, such as azole-antimycotics (e.g., ketoconazole, itraconazole, voriconazole and posaconazole) and HIV protease inhibitors (e.g., ritonavir).

Active substances which are not considered strong inhibitors of both CYP3A4 and P-gp, (eg., diltiazem, naproxen, clarithromycin, amiodarone, verapamil, quinidine) are expected to increase apixaban plasma concentration to a lesser extent. No dose adjustment for apixaban is

required when coadministered with agents that are not strong inhibitors of both CYP3A4 and P-gp. For example, diltiazem (360 mg once a day), considered a moderate CYP3A4 and a weak P-gp inhibitor, led to a 1.4-fold increase in mean apixaban AUC and a 1.3-fold increase in  $C_{max}$ . Naproxen (500 mg, single dose) an inhibitor of P-gp but not an inhibitor of CYP3A4, led to a 1.5-fold and 1.6-fold increase in mean apixaban AUC and  $C_{max}$ , respectively. Clarithromycin (500 mg, twice a day), an inhibitor of P-gp and a strong inhibitor of CYP3A4, led to a 1.6-fold and 1.3-fold increase in mean apixaban AUC and  $C_{max}$  respectively.

#### Inducers of CYP3A4 and P-gp

Coadministration of apixaban with rifampicin, a strong inducer of both CYP3A4 and P-gp, led to an approximate 54% and 42% decrease in mean apixaban AUC and  $C_{max}$ , respectively. The concomitant use of apixaban with other strong CYP3A4 and P-gp inducers (e.g., phenytoin, carbamazepine, phenobarbital or St. John's Wort) may also lead to reduced apixaban plasma concentrations. No dose adjustment for apixaban is required during concomitant therapy with such medicinal products, however in patients receiving concomitant systemic treatment with strong inducers of both CYP3A4 and P-gp apixaban should be used with caution for the prevention of VTE in elective hip or knee replacement surgery, for the prevention of stroke and systemic embolism in patients with NVAF and for the prevention of recurrent DVT and PE.

Apixaban is not recommended for the treatment of DVT and PE in patients receiving concomitant systemic treatment with strong inducers of both CYP3A4 and P-gp since efficacy may be compromised.

#### Anticoagulants, platelet aggregation inhibitors, SSRIs/SNRIs and NSAIDs

Due to an increased bleeding risk, concomitant treatment with any other anticoagulants is contraindicated.

After combined administration of enoxaparin (40 mg single dose) with apixaban (5 mg single dose), an additive effect on anti-Factor Xa activity was observed.

Pharmacokinetic or pharmacodynamic interactions were not evident when apixaban was coadministered with ASA 325 mg once a day.

Apixaban coadministered with clopidogrel (75 mg once a day) or with the combination of clopidogrel 75 mg and ASA 162 mg once daily, or with prasugrel (60 mg followed by 10 mg once daily) in Phase I studies did not show a relevant increase in template bleeding time, or further inhibition of platelet aggregation, compared to administration of the antiplatelet agents without apixaban. Increases in clotting tests (PT, INR, and aPTT) were consistent with the effects of apixaban alone.

Naproxen (500 mg), an inhibitor of P-gp, led to a 1.5-fold and 1.6-fold increase in mean apixaban AUC and  $C_{max}$ , respectively. Corresponding increases in clotting tests were observed for apixaban. No changes were observed in the effect of naproxen on arachidonic acid-induced platelet aggregation and no clinically relevant prolongation of bleeding time was observed after concomitant administration of apixaban and naproxen.

Despite these findings, there may be individuals with a more pronounced pharmacodynamic response when antiplatelet agents are coadministered with apixaban. Apixaban Tablets

should be used with caution when coadministered with SSRIs/SNRIs or NSAIDs (including acetylsalicylic acid) because these medicinal products typically increase the bleeding risk. A significant increase in bleeding risk was reported with the triple combination of apixaban, ASA and clopidogrel in a clinical study in patients with acute coronary syndrome.

Medicinal products associated with serious bleeding are not recommended concomitantly with Apixaban Tablets, such as: thrombolytic agents, GPIIb/IIIa receptor antagonists, thienopyridines (e.g., clopidogrel), dipyridamole, dextran and sulfapyrazone.

#### Other concomitant therapies

No clinically significant pharmacokinetic or pharmacodynamic interactions were observed when apixaban was coadministered with atenolol or famotidine. Coadministration of apixaban 10 m g with atenolol 100 m g did not have a clinically relevant effect on the pharmacokinetics of apixaban. Following administration of the two medicinal products together, mean apixaban AUC and  $C_{max}$  were 15% and 18% lower than when administered alone. The administration of apixaban 10 m g with famotidine 40 m g had no effect on apixaban AUC or  $C_{max}$ .

#### Effect of apixaban on other medicinal products

*In vitro* apixaban studies showed no inhibitory effect on the activity of CYP1A2, CYP2A6, CYP2B6, CYP2C8, CYP2C9, CYP2D6 or CYP3A4 ( $IC_{50} > 45 \mu M$ ) and weak inhibitory effect on the activity of CYP2C19 ( $IC_{50} > 20 \mu M$ ) at concentrations that are significantly greater than peak plasma concentrations observed in patients. Apixaban did not induce CYP1A2, CYP2B6, CYP3A4/5 at a concentration up to 20  $\mu M$ . Therefore, apixaban is not expected to alter the metabolic clearance of coadministered medicinal products that are metabolised by these enzymes. Apixaban is not a significant inhibitor of P-gp.

In studies conducted in healthy subjects, as described below, apixaban did not meaningfully alter the pharmacokinetics of digoxin, naproxen, or atenolol.

##### *Digoxin*

Coadministration of apixaban (20 mg once a day) and digoxin (0.25 mg once a day), a P-gp substrate, did not affect digoxin AUC or  $C_{max}$ . Therefore, apixaban does not inhibit P-gp mediated substrate transport.

##### *Naproxen*

Coadministration of single doses of apixaban (10 mg) and naproxen (500 mg), a commonly used NSAID, did not have any effect on the naproxen AUC or  $C_{max}$ .

##### *Atenolol*

Coadministration of a single dose of apixaban (10 mg) and atenolol (100 mg), a common beta-blocker, did not alter the pharmacokinetics of atenolol.

#### Activated charcoal

Administration of activated charcoal reduces apixaban exposure.

## **4.6 Pregnancy and lactation**

### Pregnancy

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There are no data from the use of apixaban in pregnant women. Animal studies do not indicate direct or indirect harmful effects with respect to reproductive toxicity. Apixaban is not recommended during pregnancy.

Breast-feeding

It is unknown whether apixaban or its metabolites are excreted in human milk. Available data in animals have shown excretion of apixaban in milk. In rat milk, a high milk to maternal plasma ratio ( $C_{max}$  about 8, AUC about 30) was found, possibly due to active transport into the milk. A risk to newborns and infants cannot be excluded.

A decision must be made to either discontinue breast-feeding or to discontinue/abstain from apixaban therapy.

Fertility

Studies in animals dosed with apixaban have shown no effect on fertility.

**4.7 Effects on ability to drive and use machines**

Apixaban Tablets has no or negligible influence on the ability to drive and use machines.

**4.8 Undesirable effects**

Tabulated list of adverse reactions

Table 2 shows the adverse reactions ranked under headings of system organ class and frequency using the following convention: 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 ( $< 1/10,000$ ); not known (cannot be estimated from the available data) for VTEp, NVAf, and VTEt respectively.

Table 2

<b>System Organ Class</b>	<b>Prevention of VTE in adult patients who have undergone elective hip or knee replacement surgery (VTEp)</b>	<b>Prevention of stroke and systemic embolism in adult patients with NVAf, with one or more risk factors (NVAf)</b>	<b>Treatment of DVT and PE, and prevention of recurrent DVT and PE (VTEt)</b>
<i>Blood and lymphatic system disorders</i>			
Anaemia	Common	Common	Common
Thrombocytopenia	Uncommon	Uncommon	Common
<i>Immune system disorders</i>			
Hypersensitivity, allergic oedema and Anaphylaxis	Rare	Uncommon	Uncommon
Pruritus	Uncommon	Uncommon	Uncommon*
<i>Nervous system disorders</i>			

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Brain haemorrhage <sup>†</sup>	Not known	Uncommon	Rare
<i>Eye disorders</i>			
Eye haemorrhage (including conjunctival haemorrhage)	Rare	Common	Uncommon
<i>Vascular disorders</i>			
Haemorrhage, haematoma	Common	Common	Common
Hypotension (including procedural hypotension)	Uncommon	Common	Uncommon
Intra-abdominal haemorrhage	Not known	Uncommon	Not known
<i>Respiratory, thoracic and mediastinal disorders</i>			
Epistaxis	Uncommon	Common	Common
Haemoptysis	Rare	Uncommon	Uncommon
Respiratory tract haemorrhage	Not known	Rare	Rare
<i>Gastrointestinal disorders</i>			
Nausea	Common	Common	Common
Gastrointestinal haemorrhage	Uncommon	Common	Common
Haemorrhoidal haemorrhage	Not known	Uncommon	Uncommon
Mouth haemorrhage	Not known	Uncommon	Common
Haematochezia	Uncommon	Uncommon	Uncommon
Rectal haemorrhage, gingival bleeding	Rare	Common	Common
Retroperitoneal haemorrhage	Not known	Rare	Not known
<i>Hepatobiliary disorders</i>			
Liver function test abnormal, aspartate aminotransferase increased, blood alkaline phosphatase increased, blood bilirubin increased	Uncommon	Uncommon	Uncommon
Gamma-glutamyltransferase increased	Uncommon	Common	Common
Alanine aminotransferase increased	Uncommon	Uncommon	Common
<i>Skin and subcutaneous tissue disorders</i>			
Skin rash	Not known	Uncommon	Common
<i>Musculoskeletal and connective tissue disorders</i>			
Muscle haemorrhage	Rare	Rare	Uncommon
<i>Renal and urinary disorders</i>			
Haematuria	Uncommon	Common	Common
<i>Reproductive system and breast disorders</i>			
Abnormal vaginal haemorrhage,	Uncommon	Uncommon	Common

urogenital haemorrhage			
<i>General disorders and administration site conditions</i>			
Application site bleeding	Not known	Uncommon	Uncommon
<i>Investigations</i>			
Occult blood positive	Not known	Uncommon	Uncommon
<i>Injury, poisoning and procedural complications</i>			
Contusion	Common	Common	Common
Post procedural haemorrhage (including post procedural haematoma, wound haemorrhage, vessel puncture site haematoma and catheter site haemorrhage), wound secretion, incision site haemorrhage (including incision site haematoma), operative haemorrhage	Uncommon	Uncommon	Uncommon
Traumatic haemorrhage	Not known	Uncommon	Uncommon

\* There were no occurrences of generalized pruritus in CV185057 (long term prevention of VTE)

† The term "Brain haemorrhage" encompasses all intracranial or intraspinal haemorrhages (ie., haemorrhagic stroke or putamen, cerebellar, intraventricular, or subdural haemorrhages). The use of Apixaban Tablets may be associated with an increased risk of occult or overt bleeding from any tissue or organ, which may result in posthaemorrhagic anaemia. The signs, symptoms, and severity will vary according to the location and degree or extent of the bleeding.

#### **4.9 Overdose**

There is no antidote to Apixaban Tablets. Overdose of apixaban may result in a higher risk of bleeding. In the event of haemorrhagic complications, treatment must be discontinued and the source of bleeding investigated. The initiation of appropriate treatment, e.g., surgical haemostasis or the transfusion of fresh frozen plasma should be considered.

In controlled clinical trials, orally-administered apixaban in healthy subjects at doses up to 50 mg daily for 3 to 7 days (25 mg twice daily (bid) for 7 days or 50 mg once daily (od) for 3 days) had no clinically relevant adverse effects.

In healthy subjects, administration of activated charcoal 2 and 6 hours after ingestion of a 20 mg dose of apixaban reduced mean apixaban AUC by 50% and 27%, respectively, and had no impact on C<sub>max</sub>. Mean half-life of apixaban decreased from 13.4 hours when apixaban was administered alone to 5.3 hours and 4.9 hours, respectively, when activated charcoal was administered 2 and 6 hours after apixaban. Thus, administration of activated charcoal may be useful in the management of apixaban overdose or accidental ingestion.

If life-threatening bleeding cannot be controlled by the above measures, administration of prothrombin complex concentrates (PCCs) or recombinant factor VIIa may be considered. Reversal of Apixaban Tablets pharmacodynamic effects, as demonstrated by changes in the thrombin generation assay, was evident at the end of infusion and reached baseline values within 4 hours after the start of a 4-factor PCC 30 minute infusion in healthy subjects. However, there is no clinical experience with the use of 4-factor PCC products to reverse bleeding in individuals who have received Apixaban Tablets. Currently there is no experience with the use of recombinant factor VIIa in individuals receiving apixaban. Re-dosing of recombinant factor VIIa could be considered and titrated depending on improvement of bleeding.

Depending on local availability, a consultation of a coagulation expert should be considered in case of major bleedings.

Haemodialysis decreased apixaban AUC by 14% in subjects with end-stage renal disease (ESRD), when a single dose of apixaban 5 mg was administered orally. Therefore, haemodialysis is unlikely to be an effective means of managing apixaban overdose.

## **5. PHARMACOLOGICAL PROPERTIES**

### **5.1 Pharmacodynamic properties**

Pharmacotherapeutic group: Antithrombotic agents, direct factor Xa inhibitors

ATC code: B01AF02

#### **Mechanism of action**

Apixaban is a potent, oral, reversible, direct and highly selective active site inhibitor of factor Xa. It does not require antithrombin III for antithrombotic activity. Apixaban inhibits free and clot-bound factor Xa, and prothrombinase activity. Apixaban has no direct effects on platelet aggregation, but indirectly inhibits platelet aggregation induced by thrombin. By inhibiting factor Xa, apixaban prevents thrombin generation and thrombus development. Preclinical studies of apixaban in animal models have demonstrated antithrombotic efficacy in the prevention of arterial and venous thrombosis at doses that preserved haemostasis.

#### **Pharmacodynamic effects**

The pharmacodynamic effects of apixaban are reflective of the mechanism of action (FXa inhibition). As a result of FXa inhibition, apixaban prolongs clotting tests such as prothrombin time (PT), INR and activated partial thromboplastin time (aPTT). Changes observed in these clotting tests at the expected therapeutic dose are small and subject to a high degree of variability. They are not recommended to assess the pharmacodynamic effects of apixaban. In the thrombin generation assay, apixaban reduced endogenous thrombin potential, a measure of thrombin generation in human plasma.

Apixaban also demonstrates anti-FXa activity as evident by reduction in Factor Xa enzyme activity in multiple commercial anti-FXa kits, however results differ across kits. Data from clinical trials are only available for the Rotachrom<sup>®</sup> Heparin chromogenic assay. Anti-FXa



activity exhibits a close direct linear relationship with apixaban plasma concentration, reaching maximum values at the time of apixaban peak plasma concentrations. The relationship between apixaban plasma concentration and anti-FXa activity is approximately linear over a wide dose range of apixaban.

## **5.2 Pharmacokinetic properties**

### **Absorption**

The absolute bioavailability of apixaban is approximately 50% for doses up to 10 mg. Apixaban is rapidly absorbed with maximum concentrations ( $C_{max}$ ) appearing 3 to 4 hours after tablet intake. Intake with food does not affect apixaban AUC or  $C_{max}$  at the 10 mg dose. Apixaban can be taken with or without food.

Apixaban demonstrates linear pharmacokinetics with dose proportional increases in exposure for oral doses up to 10 mg. At doses  $\geq 25$  mg apixaban displays dissolution limited absorption with decreased bioavailability. Apixaban exposure parameters exhibit low to moderate variability reflected by a within-subject and inter-subject variability of ~20% CV and ~30% CV, respectively.

Following oral administration of 10 mg of apixaban as 2 crushed 5 mg tablets suspended in 30 mL of water, exposure was comparable to exposure after oral administration of 2 whole 5 mg tablets. Following oral administration of 10 mg of apixaban as 2 crushed 5 mg tablets with 30 g of apple puree, the  $C_{max}$  and AUC were 21% and 16% lower, respectively, when compared to administration of 2 whole 5 mg tablets. The reduction in exposure is not considered clinically relevant.

Following administration of a crushed 5 mg apixaban tablet suspended in 60 mL of D5W and delivered via a nasogastric tube, exposure was similar to exposure seen in other clinical trials involving healthy subjects receiving a single oral 5 mg apixaban tablet dose.

Given the predictable, dose-proportional pharmacokinetic profile of apixaban, the bioavailability results from the conducted studies are applicable to lower apixaban doses.

### **Distribution**

Plasma protein binding in humans is approximately 87%. The volume of distribution ( $V_{ss}$ ) is approximately 21 litres.

### **Biotransformation and elimination**

Apixaban has multiple routes of elimination. Of the administered apixaban dose in humans, approximately 25% was recovered as metabolites, with the majority recovered in faeces. Renal excretion of apixaban accounts for approximately 27% of total clearance. Additional contributions from biliary and direct intestinal excretion were observed in clinical and nonclinical studies, respectively.

Apixaban has a total clearance of about 3.3 L/h and a half-life of approximately 12 hours. O-demethylation and hydroxylation at the 3-oxopiperidinyl moiety are the major sites of biotransformation. Apixaban is metabolised mainly via CYP3A4/5 with minor contributions from CYP1A2, 2C8, 2C9, 2C19, and 2J2. Unchanged apixaban is the major drug-related



component in human plasma with no active circulating metabolites present. Apixaban is a substrate of transport proteins, P-gp and breast cancer resistance protein (BCRP).

#### Renal impairment

There was no impact of impaired renal function on peak concentration of apixaban. There was an increase in apixaban exposure correlated to decrease in renal function, as assessed via measured creatinine clearance. In individuals with mild (creatinine clearance 51-80 mL/min), moderate (creatinine clearance 30-50 mL/min) and severe (creatinine clearance 15-29 mL/min) renal impairment, apixaban plasma concentrations (AUC) were increased 16, 29, and 44% respectively, compared to individuals with normal creatinine clearance. Renal impairment had no evident effect on the relationship between apixaban plasma concentration and anti-FXa activity.

In subjects with end-stage renal disease (ESRD), the AUC of apixaban was increased by 36% when a single dose of apixaban 5 mg was administered immediately after haemodialysis, compared to that seen in subjects with normal renal function. Haemodialysis, started two hours after administration of a single dose of apixaban 5 mg, decreased apixaban AUC by 14% in these ESRD subjects, corresponding to an apixaban dialysis clearance of 18 mL/min. Therefore, haemodialysis is unlikely to be an effective means of managing apixaban overdose.

#### Hepatic impairment

In a study comparing 8 subjects with mild hepatic impairment, Child-Pugh A score 5 (n = 6) and score 6 (n = 2), and 8 subjects with moderate hepatic impairment, Child-Pugh B score 7 (n = 6) and score 8 (n = 2), to 16 healthy control subjects, the single-dose pharmacokinetics and pharmacodynamics of apixaban 5 mg were not altered in subjects with hepatic impairment. Changes in anti-Factor Xa activity and INR were comparable between subjects with mild to moderate hepatic impairment and healthy subjects.

#### Elderly

Elderly patients (above 65 years) exhibited higher plasma concentrations than younger patients, with mean AUC values being approximately 32% higher and no difference in  $C_{max}$ .

#### Gender

Exposure to apixaban was approximately 18% higher in females than in males.

#### Ethnic origin and race

The results across phase I studies showed no discernible difference in apixaban pharmacokinetics between White/Caucasian, Asian and Black/African American subjects. Findings from a population pharmacokinetic analysis in patients who received apixaban were generally consistent with the phase I results.

#### Body weight

## Summary Product Characteristics (SPC)

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Compared to apixaban exposure in subjects with body weight of 65 to 85 kg, body weight > 120 kg was associated with approximately 30% lower exposure and body weight < 50 kg was associated with approximately 30% higher exposure.

### Pharmacokinetic/pharmacodynamic relationship

The pharmacokinetic /pharmacodynamic (PK/PD) relationship between apixaban plasma concentration and several PD endpoints (anti-FXa activity, INR, PT, aPTT) has been evaluated after administration of a wide range of doses (0.5 – 50 mg). The relationship between apixaban plasma concentration and anti-Factor Xa activity was best described by a linear model. The PK/PD relationship observed in patients was consistent with that established in healthy subjects.

### **5.3 Preclinical safety data**

Preclinical data reveal no special hazard for humans based on conventional studies of safety pharmacology, repeated dose toxicity, genotoxicity, carcinogenic potential, fertility and embryo-foetal development and juvenile toxicity.

The major observed effects in the repeated dose toxicity studies were those related to the pharmacodynamic action of apixaban on blood coagulation parameters. In the toxicity studies little to no increase of bleeding tendency was found. However, since this may be due to a lower sensitivity of the non-clinical species compared to humans, this result should be interpreted with caution when extrapolating to humans.

## **6. PHARMACEUTICAL PARTICULARS**

### **6.1 List of Excipients**

**Apixaban Tablets 2.5mg:** Hypromellose, Stearic Acid, Tetrahydrofuran, Anhydrous Lactose, Microcrystalline Cellulose, Croscarmellose Sodium, Magnesium Stearate, Opadry II White 32K580000 (Hypromellose, Lactose Monohydrate, Titanium Dioxide, Triacetin)

**Apixaban Tablets 5mg:** Hypromellose, Stearic Acid, Tetrahydrofuran, Anhydrous Lactose, Microcrystalline Cellulose, Croscarmellose Sodium, Magnesium Stearate, Opadry II Beige 32K570013 (Hypromellose, Lactose Monohydrate, Titanium Dioxide, Triacetin, Iron Oxide Yellow, Iron Oxide Red)

### **6.2 Incompatibilities**

Not applicable

### **6.3 Shelf life**

2 Years

**6.4 Special precautions for storage**

STORE UPTO 30°C.  
KEEP OUT OF REACH OF CHILDREN.

**6.5 Nature and contents of container**

Blister pack of 10's

**6.6 Special precautions for disposal and other handling**

Any unused product or waste material should be disposed of in accordance with local requirements.

**7. REGISTRANT**

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**9. DATE OF REVISION OF THE TEXT**

To be included after first registration.