## **Product Data Sheet/ Summary of Product Characteristics**

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

PREDOGREL (Clopidogrel Tablets USP 75 mg)

## 2. QUALITATIVE AND QUANTITATIVE COMPOSITION

## Composition:

Each film coated tablet contains:

Clopidogrel Bisulfate USP Equivalent to Clopidogrel 75 mg

Colour: Titanium dioxide BP

Excipients: q.s.

Batch Size: 10,000 T

S.N.	Ingredients	Spec.	Ovg. %	Qty/ Tab (mg)	Std. batch qty		
					(kg)		
1	Clopidogrel Bisulphate	USP		<b>98.00</b> ≡ <b>75.00</b>	0.980		
	Equivalent to Clopidogrel						
2	Lactose	USP		55.00	0.550		
3	Micro crystalline cellulose	BP		86.00	0.860		
	Lubricants						
4	Croscarmellose sodium	BP		25.00	0.250		
5	Purified talc	BP		25.40	0.254		
6	Colloidal anhydrous silica	BP		10.00	0.100		
7	Sodium stearyl fumarate	BP		5.00	0.050		
	Total			304.40			
	Film coating						
8	Hypromellose	BP		7.00	0.070		
9	Titanium dioxide	BP		5.00	0.050		

10	Purified talc	BP	 1.00	0.010
11	Macrogols	BP	 0.80	0.008
12	Propylene glycol	BP	 0.40	0.004
13	*Isopropyl alcohol	BP	 70.00	0.70
14	*Dichloromethane	BP	 50.00	0.50
	Total		318.60	

BP: British Pharmacopoeia

USP: United States Pharmacopoeia

Average weight of uncoated tablet:  $304.40 \text{ mg} \pm 5.0\%$ 

Average weight of film coated tablet:  $318.60 \text{ mg} \pm 5.0\%$ 

Note: \* Dichloromethane and isopropyl alcohol used as solvent and are not found in the final product.

## **3. PHARMACEUTICAL FORM**

Film coated tablet

## **4.CLINICAL PARTICULARS**

## **4.1 THERAPEUTIC INDICATIONS**

Prevention of atherothrombotic events

- Adult patients suffering from myocardial infarction (from a few days until less than 35 days), ischaemic stroke (from 7 days until less than 6 months) or established peripheral arterial disease.

- Adult patients suffering from acute coronary syndrome:

- Non-ST segment elevation acute coronary syndrome (unstable angina or non-Q-wave myocardial infarction), including patients undergoing a stent placement following percutaneous coronary intervention, in combination with acetylsalicylic acid (ASA).

- ST segment elevation acute myocardial infarction, in combination with ASA in medically treated patients eligible for thrombolytic therapy.

Prevention of atherothrombotic and thromboembolic events in atrial fibrillation

In adult patients with atrial fibrillation who have at least one risk factor for vascular events, are not suitable for treatment with Vitamin K antagonists (VKA) and who have a low bleeding risk, clopidogrel is indicated in combination with ASA for the prevention of atherothrombotic and thromboembolic events, including stroke.

## 4.2. POSOLOGY AND METHOD OF ADMINISTRATION

## Posology

- Adults and older people

Clopidogrel should be given as a single daily dose of 75 mg.

In patients suffering from acute coronary syndrome:

- Non-ST segment elevation acute coronary syndrome (unstable angina or non-Q-wave myocardial infarction): clopidogrel treatment should be initiated with a single 300-mg loading dose and then continued at 75 mg once a day (with acetylsalicylic acid (ASA) 75 mg-325 mg daily). Since higher doses of ASA were associated with higher bleeding risk it is recommended that the dose of ASA should not be higher than 100 mg. The optimal duration of treatment has not been formally established. Clinical trial data support use up to 12 months, and the maximum benefit was seen at 3 months.

- ST segment elevation acute myocardial infarction: clopidogrel should be given as a single daily dose of 75 mg initiated with a 300-mg loading dose in combination with ASA and with or without thrombolytics. For patients over 75 years of age clopidogrel should be initiated without a loading dose. Combined therapy should be started as early as possible after symptoms start and continued for at least four weeks. The benefit of the combination of clopidogrel with ASA beyond four weeks has not been studied in this setting.

In patients with atrial fibrillation, clopidogrel should be given as a single daily dose of 75 mg. ASA (75-100 mg daily) should be initiated and continued in combination with clopidogrel.

If a dose is missed:

• Within less than 12 hours after regular scheduled time: patients should take the dose immediately and

then take the next dose at the regular scheduled time.

• For more than 12 hours: patients should take the next dose at the regular scheduled time and should not double the dose.

- Paediatric population

Clopidogrel should not be used in children because of efficacy concerns.

- Renal impairment

Therapeutic experience is limited in patients with renal impairment.

- Hepatic impairment

Therapeutic experience is limited in patients with moderate hepatic disease who may have bleeding diatheses.

### Method of administration

Oral

## **4.3 CONTRAINDICATIONS**

- Hypersensitivity to the active substance or to any of the excipients listed.

- Severe hepatic impairment.

- Active pathological bleeding such as peptic ulcer or intracranial haemorrhage.

#### 4.4. SPECIAL WARNINGS AND PRECAUTIONS FOR USE

Bleeding and haematological disorders

Due to the risk of bleeding and haematological adverse events, blood cell count determination and/or other appropriate testing should be promptly considered whenever clinical symptoms suggestive of bleeding arise during the course of treatment. As with other antiplatelet agents, clopidogrel should be used with caution in patients who may be at risk of increased bleeding from trauma, surgery or other pathological conditions and in patients receiving treatment with ASA, heparin, glycoprotein IIb/IIIa inhibitors or non-steroidal anti-inflammatory drugs (NSAIDs)

including Cox-2 inhibitors, or selective serotonin reuptake inhibitors (SSRIs), or other medicinal products associated with bleeding risk such as pen-toxify. Patients should be followed carefully for any signs of bleeding including occult bleeding, especially during the first weeks of treatment and/or after invasive cardiac procedures or surgery. The concomitant administration of clopidogrel with oral anticoagulants is not recommended since it may increase the intensity of bleedings.

If a patient is to undergo elective surgery and antiplatelet effect is temporarily not desirable, clopidogrel should be discontinued 7 days prior to surgery. Patients should inform physicians and dentists that they are taking clopidogrel before any surgery is scheduled and before any new medicinal product is taken. Clopidogrel prolongs bleeding time and should be used with caution in patients who have lesions with a propensity to bleed (particularly gastrointestinal and intraocular). Patients should be told that it might take longer than usual to stop bleeding when they take clopidogrel (alone or in combination with ASA), and that they should report any unusual bleeding (site or duration) to their physician.

#### Thrombotic Thrombocytopenic Purpura (TTP)

Thrombotic Thrombocytopenic Purpura (TTP) has been reported very rarely following the use of clopidogrel, sometimes after a short exposure. It is characterised by thrombocytopenia and microangiopathic haemolytic anaemia associated with either neurological findings, renal dysfunction or fever. TTP is a potentially fatal condition requiring prompt treatment including plasmapheresis.

#### Acquired haemophilia

Acquired haemophilia has been reported following use of clopidogrel. In cases of confirmed isolated activated Partial Thromboplastin Time (aPTT) prolongation with or without bleeding, acquired haemophilia should be considered. Patients with a confirmed diagnosis of acquired haemophilia should be managed and treated by specialists, and clopidogrel should be discontinued. Recent ischaemic stroke

In view of the lack of data, clopidogrel cannot be recommended during the first 7 days after acute ischaemic stroke.

#### Cytochrome P450 2C19 (CYP2C19)

Pharmacogenetics: In patients who are poor CYP2C19 metabolisers, clopidogrel at recommended doses forms less of the active metabolite of clopidogrel and has a smaller effect on platelet function. Tests are available to identify a patient's CYP2C19 genotype.

Since clopidogrel is metabolized to its active metabolite partly by CYP2C19, use of medicinal products that inhibit the activity of this enzyme would be expected to result in reduced drug levels of the active metabolite of clopidogrel. The clinical relevance of this interaction is uncertain. As a precaution concomitant use of strong or moderate CYP2C19 inhibitors should be discouraged.

#### CYP2C8 substrates

Caution is required in patients treated concomitantly with Clopidogrel and CYP2C8 substrate medicinal products.

### Cross reactions among thienopyridines

Patients should be evaluated for history of hypersensitivity to thienopyridines (such as clopidogrel, ticlopidine, prasugrel) since cross-reactivity among thienopyridines has been reported. Thienopyridines may cause mild to severe allergic reactions such as rash, angioedema, or haematological cross-reactions such as thrombocytopaenia and neutropaenia. Patients who had developed a previous allergic reaction and/or haematological reaction to one thienopyridine may have an increased risk of developing the same or another reaction to another thienopyridine. Monitoring for signs of hypersensitivity in patients with a known allergy to thienopyridines is advised.

## Renal impairment

Therapeutic experience with clopidogrel is limited in patients with renal impairment. Therefore clopidogrel should be used with caution in these patients.

## Hepatic impairment

Experience is limited in patients with moderate hepatic disease who may have bleeding diatheses. Clopidogrel should therefore be used with caution in this population.

# 4.5 INTERACTION WITH OTHER MEDICINAL PRODUCTS AND PHARMACEUTICAL FORM

*Medicinal products associated with bleeding risk:* There is an increased risk of bleeding due to the potential additive effect. The concomitant administration of medicinal products associated with bleeding risk should be undertaken.

*Oral anticoagulants:* the concomitant administration of clopidogrel with oral anticoagulants is not recommended since it may increase the intensity of bleedings. Although the administration of clopidogrel 75 mg/day did not modify the pharmacokinetics of S-warfarin or International Normalised Ratio (INR) in patients receiving long-term warfarin therapy, coadministration of clopidogrel with warfarin increases the risk of bleeding because of independent effects on hemostasis.

*Glycoprotein IIb/IIIa inhibitors:* clopidogrel should be used with caution in patients who receive concomitant glycoprotein IIb/IIIa inhibitors.

*Acetylsalicylic acid (ASA):* ASA did not modify the clopidogrel-mediated inhibition of ADP-induced platelet aggregation, but clopidogrel potentiated the effect of ASA on collagen-induced platelet aggregation. However, concomitant administration of 500 mg of ASA twice a day for one day did not significantly increase the prolongation of bleeding time induced by clopidogrel intake. A pharmacodynamic interaction between clopidogrel and acetylsalicylic acid is possible, leading to increased risk of bleeding. Therefore, concomitant use should be undertaken with caution. However, clopidogrel and ASA have been administered together for up to one year.

*Heparin*: in a clinical study conducted in healthy subjects, clopidogrel did not necessitate modification of the heparin dose or alter the effect of heparin on coagulation. Co-administration of heparin had no effect on the inhibition of platelet aggregation induced by clopidogrel. A pharmacodynamic interaction between clopidogrel and heparin is possible, leading to increased risk of bleeding. Therefore, concomitant use should be undertaken with caution.

*Thrombolytics:* the safety of the concomitant administration of clopidogrel, fibrin or non-fibrin specific thrombolytic agents and heparins was assessed in patients with acute myocardial infarction. The incidence of clinically significant bleeding was similar to that observed when thrombolytic agents and heparin are co-administered with ASA.

*NSAIDs:* in a clinical study conducted in healthy volunteers, the concomitant administration of clopidogrel and naproxen increased occult gastrointestinal blood loss. However, due to the lack of interaction studies with other NSAIDs it is presently unclear whether there is an increased risk of gastrointestinal bleeding with all NSAIDs. Consequently, NSAIDs including Cox-2 inhibitors and clopidogrel should be co-administered with caution.

*SSRIs*: since SSRIs affect platelet activation and increase the risk of bleeding, the concomitant administration of SSRIs with clopidogrel should be undertaken with caution.

*Other concomitant therapy:* Since clopidogrel is metabolized to its active metabolite partly by CYP2C19, use of medicinal products that inhibit the activity of this enzyme would be expected to result in reduced drug levels of the active metabolite of clopidogrel. The clinical relevance of this interaction is uncertain. As a precaution concomitant use of strong or moderate CYP2C19 inhibitors should be discouraged.

Medicinal products that are strong or moderate CYP2C19 inhibitors include, for example, omeprazole and esomeprazole, fluvoxamine, fluoxetine, moclobemide, voriconazole, fluconazole, ticlopidine, carbamazepine, and efavirenz.

Proton Pump Inhibitors (PPI):

Omeprazole 80 mg once daily administered either at the same time as clopidogrel or with 12 hours between the administrations of the two drugs decreased the exposure of the active metabolite by 45% (loading dose) and 40% (maintenance dose). The decrease was associated with a 39% (loading dose) and 21% (maintenance dose) reduction inhibition of platelet aggregation. Esomeprazole is expected to give a similar interaction with clopidogrel.

Inconsistent data on the clinical implications of this pharmacokinetic (PK)/pharmacodynamic (PD) interaction in terms of major cardiovascular events have been reported from both observational and clinical studies. As a precaution, concomitant use of omeprazole or esomeprazole should be discouraged.

Less pronounced reductions of metabolite exposure has been observed with pantoprazole or lansoprazole.

The plasma concentrations of the active metabolite was 20% reduced (loading dose) and 14% reduced (maintenance dose) during concomitant treatment with pantoprazole 80 mg once daily. This was associated with a reduction of the mean inhibition of platelet aggregation by 15% and 11%, respectively. These results indicate that clopidogrel can be administered with pantoprazole.

There is no evidence that other medicinal products that reduce stomach acid such as H2 blockers or antacids interfere with antiplatelet activity of clopidogrel.

*Other medicinal products:* A number of other clinical studies have been conducted with clopidogrel and other concomitant medicinal products to investigate the potential for pharmacodynamic and pharmacokinetic interactions. No clinically significant pharmacodynamic interactions were observed when clopidogrel was co-administered with atenolol, nifedipine, or both atenolol and nifedipine. Furthermore, the pharmacodynamic activity of clopidogrel was not significantly influenced by the co administration of phenobarbital, or oestrogen.

The pharmacokinetics of digoxin or theophylline were not modified by the co-administration of clopidogrel. Antacids did not modify the extent of clopidogrel absorption.

Data from the CAPRIE study indicate that phenytoin and tolbutamide which are metabolized by CYP2C9 can be safely co-administered with clopidogrel.

CYP2C8 substrate medicinal products: clopidogrel has been shown to increase repaglinide exposure in healthy volunteers. In vitro studies have shown the increase in repaglinide exposure is due to inhibition of CYP2C8 by the glucuronide metabolite of clopidogrel. Due to the risk of increased plasma concentrations, concomitant administration of clopidogrel and drugs primarily cleared by CYP2C8 metabolism.

Apart from the specific medicinal product interaction information described above, interaction studies with clopidogrel and some medicinal products commonly administered in patients with atherothrombotic disease have not been performed. However, patients entered into clinical trials with clopidogrel received a variety of concomitant medicinal products including diuretics, beta blockers, ACEI, calcium antagonists, cholesterol lowering agents, coronary vasodilators, antidiabetic agents (including insulin), antiepileptic agents, and GPIIb/IIIa antagonists without evidence of clinically significant adverse interactions.

## 4.6 PREGNANCY AND LACTATION

#### Pregnancy

As no clinical data on exposure to clopidogrel during pregnancy are available, it is preferable not to use clopidogrel during pregnancy as a precautionary measure.

Animal studies do not indicate direct or indirect harmful effects with respect to pregnancy, embryonal/foetal development, parturition or postnatal development.

## Breast-feeding

It is unknown whether clopidogrel is excreted in human breast milk. Animal studies have shown excretion of clopidogrel in breast milk. As a precautionary measure, breast-feeding should not be continued during treatment with Clopidogrel 75 mg Tablets.

## 4.7 EFFECTS ON ABILITY TO DRIVE AND USE MACHINES

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

4.8 UNDESIRABLE EFFECTS					
System Organ Class	Common	Uncommon	Rare	Very rare, not	
				known*	
Blood and the		Thrombocytopenia,	Neutropenia,	Thrombotic	
lymphatic system		leucopenia,	including	thrombocytopenic	
disorders		eosinophilia	severe	purpura (TTP)	
			neutropenia	aplastic anaemia,	
				pancytopenia,	
				agranulocytosis,	
				severe	
				thrombocytopenia,	
				acquired	
				haemophilia A,	
				granulocytopenia,	
				anaemia	
Cardiac disorders				Kounis syndrome	
				(vasospastic	
				allergic angina /	
				allergic	
				mycocardial	

		PREDOGREL rel Tablets USP	75 mg	
				infarction) in the context of a hypersensitivity reaction due to clopidogrel*
Immune system disorders				Serum sickness, anaphylactoid reactions, cross- reactive drug hypersensitivity among thienopyridines (such as ticlopidine, prasugrel)*
Psychiatric disorders				Hallucinations, confusion
Nervous system disorders		Intracranial bleeding (some cases were reported with fatal outcome), headache, paraesthesia, dizziness		Taste disturbances, ageusia
Eye disorders		Eye bleeding (conjunctival, ocular, retinal)		
Ear and labyrinth disorders			Vertigo	
Vascular disorders	Haematoma			Serious haemorrh age, haemorrhage of operative wound,

	PREDOGREL Clopidogrel Tablets USP 75 mg				
				vasculitis, hypotension	
Respiratory, thoracic and mediastinal disorders	Epistaxis			Respiratory tract bleeding (haemoptysis, pulmonary haemorrhage), bronchospasm, interstitial pneumonitis, eosinophilic	
Gastrointestinal disorders	Gastrointestinal haemorrhage, diarrhoea, abdominal pain, dyspepsia	Gastric ulcer and duodenal ulcer, gastritis, vomiting, nausea, constipation, flatulence	Retroperitoneal	pneumonia Gastrointestinal and retroperitoneal haemorrhage with fatal outcome, pancreatitis, colitis (including ulcerative or lymphocytic colitis), stomatitis	
Hepato-biliary disorders				Acute liver failure, hepatitis, abnormal liver function test	
Skin and subcutaneous tissue disorders	Bruising	Rash, pruritus, skin bleeding (purpura)		Bullous dermatitis (toxic epidermal necrolysis, Stevens Johnson Syndrome, erythema multiforme, acute generalised	

		PREDOGREL rel Tablets USF	• 75 mg	
				exanthematous pustulosis (AGEP)), angioedema, drug- induced hypersensitivity syndrome, drug rash with eosinophilia and systemic symptoms (DRESS), rash erythematous or exfoliative, urticaria, eczema,
Reproductive systems and breast disorders			Gynaecomastia	lichen planus
Musculoskeletal, connective tissue and bone disorders				Musculo-skeletal bleeding (haemarthrosis), arthritis, arthralgia, myalgia
Renal and urinary disorders		Haematuria		Glomerulonephritis, blood creatinine increased
General disorders and administration site conditions	Bleeding at puncture site			Fever
Investigations		Bleeding time prolonged, neutrophil count		

	decreased, platelet		
	count decreased		
*Information valated to	lanida gral with fraguanay "not lin own"	1	1]

\*Information related to clopidogrel with frequency "not known".

## **4.9 OVERDOSAGE**

Overdose following clopidogrel administration may lead to prolonged bleeding time and subsequent bleeding complications. Appropriate therapy should be considered if bleedings are observed. No antidote to the pharmacological activity of clopidogrel has been found. If prompt correction of prolonged bleeding time is required, platelet transfusion may reverse the effects of clopidogrel.

## 5. PHARMACOLOGICAL PROPERTIES

## **5.1 PHARMACODYNAMICS PROPERTIES**

Pharmacotherapeutic group: Antiplatelet, platelet aggregation inhibitors excl. heparin, ATC code: B01AC-04.

## Mechanism of action

Clopidogrel is a prodrug, one of whose metabolites is an inhibitor of platelet aggregation. Clopidogrel must be metabolized by CYP450 enzymes to produce the active metabolite that inhibits

platelet aggregation. The active metabolite of clopidogrel selectively inhibits the binding of adenosine diphosphate (ADP) to its platelet P2Y12 receptor and the subsequent ADP-mediated activation of the glycoprotein GPIIb/IIIa complex, thereby inhibiting platelet aggregation. Due to the irreversible binding, platelets exposed are affected for the remainder of their lifespan (approximately 7-10 days) and recovery of normal platelet function occurs at a rate consistent with platelet turnover. Platelet aggregation induced by agonists other than ADP is also inhibited by blocking the amplification of platelet activation by released ADP.

Because the active metabolite is formed by CYP450 enzymes, some of which are polymorphic or subject to inhibition by other medicinal products, not all patients will have adequate platelet inhibition.

Pharmacodynamic effects

Repeated doses of 75 mg per day produced substantial inhibition of ADP-induced platelet aggregation from the first day; this increased progressively and reached steady state between Day 3 and Day 7. At steady state, the average inhibition level observed with a dose of 75 mg per day was between 40% and 60%. Platelet aggregation and bleeding time gradually returned to baseline values, generally within 5 days after treatment was discontinued.

## **5.2 PHARMACOKINETIC PROPERTIES**

## Absorption

After single and repeated oral doses of 75 mg per day, clopidogrel is rapidly absorbed. Mean peak plasma levels of unchanged clopidogrel (approximately 2.2-2.5 ng/ml after a single 75 mg oral dose) occurred approximately 45 minutes after dosing. Absorption is at least 50%, based on urinary excretion of clopidogrel metabolites.

## Distribution

Clopidogrel and the main circulating (inactive) metabolite bind reversibly in vitro to human plasma proteins (98% and 94% respectively). The binding is non-saturable in vitro over a wide concentration range.

## Biotransformation

Clopidogrel is extensively metabolized by the liver. In vitro and in vivo, clopidogrel is metabolized according to two main metabolic pathways: one mediated by esterases and leading to hydrolysis into its inactive carboxylic acid derivative (85% of circulating metabolites), and one mediated by multiple cytochromes P450. Clopidogrel is first metabolized to a 2 oxo-clopidogrel intermediate metabolite. Subsequent metabolism of the 2 oxo-clopidogrel intermediate metabolite results in formation of the active metabolite, a thiol derivative of clopidogrel. The active metabolite is formed mostly by CYP2C19, with contributions from several other CYP enzymes, including CYP1A2, CYP2B6 and CYP3A4. The active thiol metabolite which has been isolated in vitro, binds rapidly and irreversibly to platelet receptors, thus inhibiting platelet aggregation.

The Cmax of the active metabolite is twice as high following a single 300-mg clopidogrel loading dose as it is after four days of 75-mg maintenance dose. Cmax occurs approximately 30 to 60 minutes after dosing.

### Elimination

Following an oral dose of <sup>14</sup>C-labelled clopidogrel in man, approximately 50% was excreted in the urine and approximately 46% in the faeces in the 120-hour interval after dosing. After a single oral dose of 75 mg, clopidogrel has a half-life of approximately 6 hours. The elimination half-life of the main circulating (inactive) metabolite was 8 hours after single and repeated administration.

Pharmacogenetics

CYP2C19 is involved in the formation of both the active metabolite and the 2 oxo-clopidogrel

intermediate metabolite. Clopidogrel active metabolite pharmacokinetics and antiplatelet effects, as

measured by ex vivo platelet aggregation assays, differ according to CYP2C19 genotype.

## **5.3 PRECLINICAL SAFETY DATA**

Not Applicable

## 6.PHARAMACEUTICAL PARTICULARS

## 6.1 LIST OF EXCIPIENTS

SN.	Excipients	Specifications
1	Lactose	As per USP
2	Micro crystalline cellulose	As per BP
3	Croscarmellose sodium	As per BP
4	Purified talc	As per BP
5	Colloidal anhydrous silica	As per BP
6	Sodium stearyl fumarate	As per BP
7	Hypromellose	As per BP
8	Titanium dioxide	As per BP
9	Macrogols	As per BP
10	Propylene glycol	As per BP
11	Dichloromethane	As per BP
12	Isopropyl alcohol	As per BP

**BP:** British Pharmacopoeia

USP: United States Pharmacopoeia

#### **6.2 INCOMPATIBILITY**

None such data reported.

#### **6.3 SHELF LIFE**

36 months

## 6.4 SPECIAL PRECAUTIONS FOR STORAGE

Do not store above 30°C. Protect from light & moisture.

### 6.5 NATURE AND CONTENTS OF CONTAINER

2x14 Tablets (Alu-Alu)

## 6.6 SPECIAL PRECAUTIONS FOR DISPOSABLE AND OTHER HANDLING

No special precautions required but general disposing & handling guidelines must be followed. Do not throw away any medicines via wastewater or household waste. Ask your pharmacist how to throw away medicines you no longer use. These measures will help protect the environment.