

Summary of Product Characteristics

1. Name of the medicinal product

ZENLOL 40

2. Qualitative and quantitative composition

Each Uncoated tablet contains

Propranolol Hydrochloride BP.....40 mg

Excipients of known effect:

Each Uncoated tablet contains 30 mg of lactose.

For the full list of Excipients, See Section 6.1.

3. Pharmaceutical form

Uncoated Tablet.

A White, round, beveled, uncoated tablet.

4. Clinical Particulars:

4.1 Therapeutic indications

- Angina pectoris.
- Hypertension.
- Long-term prophylaxis against myocardial reinfarction after recovery from acute myocardial infarction Hypertrophic obstructive cardiomyopathy.
- Essential tremor.
- Supraventricular cardiac arrhythmia.
- Ventricular cardiac arrhythmias.
- Hyperthyroidism and thyrotoxicosis Phaeochromocytoma (with an alpha blocker).
- Migraine.
- Prophylaxis of upper gastrointestinal bleeding in patients with portal hypertension and oesophageal varices.

4.2 Posology and method of administration

Adults:

Angina pectoris:

The starting dose is 40 mg two to three times daily, increasing by the same amount at weekly intervals according to the response. The dose may be increased to 120 - 240 mg daily.

Migraine:

The starting dose is 40 mg two to three times daily. The dose may be increased to 80mg -160 mg daily.

Essential tremor:

The starting dose is 40 mg two to three times daily. For these indications the dosage and the dose intervals should be adapted to individual patient needs.

Hypertension:

Initially 40 mg two or three times daily, which may be increased by 80 mg per day at weekly intervals according to response. The usual dose range is 160-320 mg

daily. With concurrent diuretic and/or peripheral vasodilators a further reduction of blood pressure is obtained. Arrhythmias The starting dose is 10 mg to 40 mg two or three times a day.

Hypertrophic obstructive cardiomyopathy:

Most patients respond within the dosage range of 10-40mg three or four times daily.

Post myocardial infarction:

Treatment should be initiated when myocardial infarction has been stabilized with an initial dose of 40 mg 2-3 times daily for two or three days. In order to improve compliance, the total daily dosage may thereafter be given as 80 mg twice a day.

Thyrotoxicosis:

Most patients respond within the dosage range of 10-40 mg three or four times daily.

Hyperthyroidism:

The dose is adjusted according to clinical response.

Phaeochromocytoma (used only in conjunction with an alpha-receptor blocking drug): Pre-operatively; 60 mg daily for three days is recommended. In-operable malignant cases, 30 mg daily.

Portal Hypertension: Dosage should be titrated to achieve approximately 25% reduction in heart rate at rest. Dosing should begin with 40 mg twice daily, increasing to 80 mg twice daily depending on heart rate response. If necessary, the dose may be increased incrementally to a maximum of 160 mg twice daily.

Pediatric population:

Arrhythmias: Dosage should be determined according to the cardiac status of the patient and the circumstances necessitating treatment. The dose should be adjusted individually and the following is a guide: Children and adolescents: 0.25-0.5 mg/kg 3-4 times daily, adjusted according to clinical response.

Elderly:

Evidence concerning the relationship between blood level and age is conflicting. Propranolol should be used to treat older people with caution. It is suggested that treatment should start with the lowest dose. The optimum dose should be individually determined according to clinical response.

Hepatic impairment:

The bioavailability of propranolol may be increased in patients with hepatic impairment and dose adjustments may be required. In patients with severe liver disease (e.g. cirrhosis) a low initial dose is recommended (not exceeding 20 mg three times a day) with close monitoring of the response to treatment (such as the effect on heart rate).

Renal impairment:

Concentrations of propranolol may increase in patients with significant renal impairment and haemodialysis. Caution should be exercised when starting treatment and selecting the initial dose.

As with other beta-adrenoceptor blocking agents, treatment should not be discontinued abruptly. The dosage should be withdrawn gradually over a period of 7 to 14 days. Either the equivalent dosage of another betaadrenoceptor blocker may be substituted or the withdrawal of propranolol should be gradual. Patients

should be followed during withdrawal especially those with ischaemic heart disease. The risk/benefit of stopping beta blockade should be made for each patient.

Method of administration

The tablets should preferably be administered before meals. For oral administration.

4.3 Contraindications

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

- Cardiac decompensation which is not adequately treated.
- Sick sinus syndrome/SA-block.
- History of bronchospasm or bronchial asthma, chronic obstructive pulmonary disease.
- Metabolic acidosis.
- Second and third-degree heart block.
- Patients prone to hypoglycaemia, e.g. due to prolonged fasting or restricted counter regulatory reserve.
- Cardiogenic shock.
- Untreated phaeochromocytoma.
- Severe bradycardia
- Severe hypotension
- Severe peripheral arterial disturbances
- Prinzmetal's angina

This warning will appear on the label: **DO NOT TAKE THIS MEDICINE IF YOU HAVE A HISTORY OF WHEEZING OR ASTHMA.**

4.4 Special warnings and precautions for use

Propranolol as with other beta-blockers:

- although contraindicated in uncontrolled heart failure, may be used in patients whose signs of heart failure have been controlled. Caution must be exercised in patients whose cardiac reserve is poor.
- should not be used in combination with calcium channel blockers with negative inotropic effects (e.g. verapamil, diltiazem), as it can lead to an exaggeration of these effects particularly in patients with impaired ventricular function and/or SA or AV conduction abnormalities. This may result in severe hypotension, bradycardia and cardiac failure. Neither the beta-blocker nor the calcium channel blocker should be administered intravenously within 48 hours of discontinuing the other.
- although contraindicated in severe peripheral circulatory disturbances, may also aggravate less severe peripheral arterial circulatory disturbances.
- due to its negative effect on conduction time, caution must be exercised if it is given to patients with first degree heart block.
- may block/modify the signs and symptoms of the hypoglycaemia (especially tachycardia). Propranolol may occasionally cause hypoglycemia even in non-

diabetics, such as neonates, infants, children, elderly, patients on hemodialysis or patients suffering from chronic liver disease and patients suffering from overdose. Severe hypoglycaemia associated with propranolol has rarely presented with seizures and/or coma in isolated patients. Caution must be exercised in the concurrent use of propranolol and hypoglycemic therapy in diabetic patients. Propranolol may prolong the hypoglycaemic response to insulin.

-may mask signs of thyrotoxicosis.

- should not be used in untreated phaeochromocytoma. However, in patients with phaeochromocytoma, an alpha-blocker may be given concomitantly.

- will reduce heart rate; in the instance when symptoms may be attributable to slow heart rate, the dose may be reduced.

- may cause a more severe reaction to a variety of allergens, when given to patients with a history of anaphylactic reaction to such allergens. Such patients may be unresponsive to the usual doses of adrenaline used to treat the allergic reactions. Abrupt withdrawal of beta-blockers is to be avoided. The dosage should be withdrawn gradually over a period of 7 to 14 days. Patients should be followed during withdrawal especially those with ischaemic heart disease.

When a patient is scheduled for surgery and a decision is made to discontinue beta-blocker therapy, this should be done at least 48 hours prior to the procedure. The risk/benefit of stopping beta blockade should be made for each patient. Since the half-life may be increased in patients with significant hepatic or renal impairment, caution must be exercised when starting treatment and selecting the initial dose. Propranolol must be used with caution in patients with decompensated cirrhosis. In patients with portal hypertension, liver function may deteriorate and hepatic encephalopathy may develop. There have been reports suggesting that treatment with propranolol may increase the risk of developing hepatic encephalopathy.

In patients with chronic obstructive pulmonary disease, non-selective beta blockers such as propranolol may aggravate the obstructive condition. Therefore, propranolol should not be used in this condition. Bronchospasm can usually be reversed by beta₂ agonist bronchodilators such as salbutamol. Large doses of the beta bronchodilator may be required to overcome the beta blockade produced by propranolol and the dose should be titrated according to the clinical response; both intravenous and inhalational administration should be considered. The use of intravenous aminophylline and/or the use of ipratropium (given by nebuliser) may also be considered. Glucagon (1 to 2 mg given intravenously) has also been reported to produce a bronchodilator effect in asthmatic patients. Oxygen or artificial ventilation may be required in severe cases.

Isolated reports of myasthenia gravis like syndrome or exacerbation of myasthenia gravis have been reported in patients administered propranolol.

Interference with laboratory tests:

Propranolol has been reported to interfere with the estimation of serum bilirubin by the diazo method and with the determination of catecholamines by methods using fluorescence.

Lactose:

This medicine contains lactose. Patients with rare hereditary problems of galactose intolerance, total lactase deficiency or glucose-galactose malabsorption should not take this medicine.

4.5 Interaction with other medicinal products and other forms of interaction

Combination not recommended

Calcium channel blockers (Verapamil, diltiazem or bepridil): Calcium channel blockers and beta-blockers have additive effects on AV conduction and sinus node function and can cause bradycardia and hypotension. The combination with propranolol should be avoided, especially in patients with cardiac decompensation. Concomitant use of sympathomimetic agents e.g., adrenaline, may counteract the effect of beta-blockers. Caution must be exercised in the parenteral administration of preparations containing adrenaline to patients taking betablockers as, in rare cases, vasoconstriction, hypertension and bradycardia may result.

Beta-agonist bronchodilators:

Non-cardioselective beta-blockers oppose the bronchodilator effects of betaagonist bronchodilators, propranolol is contraindicated in patients with asthma.

Fingolimod:

Potential of bradycardia effects with possible fatal outcomes. Treatment with Fingolimod should not be initiated in patients receiving beta blockers. In case of combination, appropriate monitoring for treatment initiation, at least overnight monitoring is recommended.

Barbiturates:

The plasma levels and the effects of beta-blockers are reduced by the barbiturates. Barbiturates are potent liver enzyme inducers which may increase the metabolism of propranolol.

Propafenone:

Plasma propranolol levels can be raised up to 100% by propafenone. This probably was because propranolol is partially metabolized by the same enzyme like propafenone (CYP2D6). This combination is also not advisable because propafenone has negative inotropic effects.

Warfarin:

Propranolol may cause a reduction in clearance and an increase in plasma concentrations of warfarin.

MAO inhibitors:

Concomitant use of MAO inhibitors (except MAO-B inhibitors) with antihypertensive agents may diminish the antihypertensive effect and lead to hypertensive reactions.

Glycosides:

Digitalis glycosides, in association with beta-blockers, may increase atrioventricular conduction time.

Combination to be used with caution, dose adjustment may be required

Amiodarone:

A few case reports suggest that patients treated with amiodarone can have severe sinus bradycardia when treated concomitantly with propranolol. Amiodarone has

an extremely long half-life (about 50 days), which means that interactions may occur long after discontinuation of therapy.

Class I antiarrhythmic drugs (disopyramide, quinidine):

Class I antiarrhythmic drugs and beta-blockers have additive negative inotropic effects which may result in hypotension and severe hemodynamic side effects in patients with impaired left ventricular function.

Non-steroidal anti-inflammatory / anti-rheumatic drugs (NSAIDs):

Anti-inflammatory drugs of NSAID-type counter the antihypertensive effect of beta-blockers. It has been studied mainly in indomethacin. In a study on diclofenac no such interaction could be detected. Data for COX-2 inhibitors are missing.

Cimetidine:

Cimetidine increases levels of propranolol in plasma, probably by inhibiting its first pass metabolism. There may be a risk of e.g. bradycardia with oral dosing.

Alcohol:

Concomitant use of alcohol may increase the plasma levels of propranolol

Anaesthetics:

Concomitant use of beta-adrenergic antagonists and anaesthetics may attenuate reflex tachycardia and increase the risk of hypotension. As a general rule, avoid sudden withdrawal of beta-blocker treatment. The anesthesiologist should be informed when the patient is receiving beta-adrenergic antagonists. Anaesthetic agents causing myocardial depression are best avoided.

Epinephrine (adrenaline):

A number of reports are available for severe hypertension and bradycardia in patients treated with propranolol and epinephrine. These clinical observations have been confirmed by studies in healthy volunteers. It has also been suggested that the intravascular administration of epinephrine may trigger these reactions

Fluvoxamine:

Fluvoxamine inhibits oxidative metabolism and increases plasma concentrations of propranolol. This may result in severe bradycardia.

Centrally-acting antihypertensives (clonidine, moxonidine, methyldopa):

Concomitant use of centrally acting antihypertensive drugs may worsen heart failure by a decrease in the central sympathetic tone (reduction of heart rate and cardiac output, vasodilation). Abrupt withdrawal, particularly if prior to beta-blocker discontinuation, may increase risk of "rebound hypertension". If the two drugs are co administered, the beta-blocker should be withdrawn several days before discontinuing clonidine. If replacing clonidine by beta blocker therapy, the introduction of beta-blockers should be delayed for several days after clonidine administration has stopped.

Rifampicin:

The metabolism of propranolol may be increased by potent liver enzyme inducer rifampicin.

Alpha blockers:

Concomitant use with alpha blockers increases the risk of hypotension, especially orthostatic hypotension, and tachycardia and palpitations Dihydropyridine calcium channel blockers: e.g **nifedipine**

Concomitant use may increase the risk of hypotension, and cardiac failure may occur with latent cardiac insufficiency.

Chlorpromazine:

The concurrent use of chlorpromazine with propranolol can result in a marked rise in plasma levels of both drugs, and thereby enhance its effects on heart rate and blood pressure as well as an enhanced antipsychotic effect for chlorpromazine and an increased antihypertensive effect for propranolol.

Lidocaine:

Administration of propranolol during infusion of lidocaine may increase the plasma concentration of lidocaine by approximately 30%. Patients already receiving propranolol tend to have higher lidocaine levels than controls. The combination should be avoided.

Antimigraine drugs:

During concomitant treatment with propranolol it inhibited the first-pass metabolism of rizatriptan whose AUC increases by 70-80%. A dose of 5 mg of rizatriptan is recommended for combination therapy. Ergotamine with propranolol has resulted in reports of vasospastic reactions in some patients.

Theophylline:

Propranolol reduces the metabolic clearance of theophylline by about 30% at a dosage of 120 mg / day and 50% at doses of 720 mg / day.

Insulin and oral antidiabetic drugs:

Concomitant use may mask certain symptoms of hypoglycaemia (palpitations, tachycardia). Propranolol may prolong the hypoglycaemic response to insulin.

Tobacco:

Tobacco smoking can reduce the beneficial effects of the beta-blockers on heart rate and blood pressure.

Laboratory tests:

Interference with laboratory tests – Propranolol has been reported to interfere with the estimation of serum bilirubin by the diazo method and with the determination of catecholamines by methods using fluorescence.

4.6 Fertility, pregnancy and lactation

Pregnancy As with all drugs Propranolol should not be given during pregnancy unless its use is essential. There is no evidence of teratogenicity with propranolol. However beta-blockers reduce placental perfusion, which may result in intra uterine foetal death, immature and premature deliveries. In addition, adverse effects (especially hypoglycaemia and bradycardia in the neonate and bradycardia in the foetus) may occur. There is an increased risk of cardiac and pulmonary complications in the neonate in the post-natal period.

Breast-feeding

Most beta adrenoceptor blocking drugs, particularly lipophilic compounds, will pass into breast milk although to a variable extent. Breast-feeding is therefore not recommended following administration of these compounds.

Fertility

No relevant data on effect of fertility in humans is available.

4.7 Effects on ability to drive and use machines

Regular medical follow up is required during treatment with this medicinal product. Because reactions differ between individuals the ability to react can be affected to such an extent that the ability to drive, operate machines or work without a secure footing is impaired. This effect is greater at the start of treatment, when the dose is increased, following a treatment switch and in conjunction with alcohol. It should be taken into account that occasionally dizziness or fatigue may occur.

4.8 Undesirable effects

Summary of the safety profile

Side effects are mostly related to the pharmacological effect. Most common are fatigue, including muscle weakness reported in between 3-5%. Adverse reactions related to propranolol are listed below by system organ class and 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 ($< 1/10,000$); Frequency not known (cannot be estimated from the available data).

The following undesired events, listed by body system, have been reported:

Blood and lymphatic system disorders

Rare: thrombocytopenia,

Frequency not known: agranulocytosis

Immune system disorders

Rare: angioedema.

Endocrine disorders

Frequency not known: masking signs of thyrotoxicosis.

Metabolic and nutritional disorders

Very rare : hypoglycaemia in neonates, infants, children, elderly patients, patients on haemodialysis, patients on concomitant antidiabetic therapy, patients with prolonged fasting and patients with chronic liver disease has been reported.

Changes in lipid metabolism (changes in blood concentrations of triglycerides and cholesterol). Severe hypoglycemia may rarely lead to seizures or coma.

Psychiatric disorders

Common: Sleep disturbances, nightmares.

Rare: Hallucinations, psychoses, mood changes

Frequency not known: depression

Nervous system disorders

Rare: confusion, memory loss, dizziness, paraesthesia.

Very rare: Isolated reports of myasthenia gravis like syndrome or exacerbation

Eye disorders

Rare: visual disturbances, dry eyes

Frequency not known: conjunctivitis

Cardiac disorders

Common: bradycardia

Rare: Heart failure deterioration, precipitation of heart block, postural hypotension which may be associated with syncope,
Frequency not known: worsening of attacks of angina pectoris

Vascular disorders

Common: cold extremities, Raynaud's syndrome

Rare: exacerbation of intermittent claudication,

Respiratory thoracic and mediastinal disorders

Common: breathlessness

Rare: Bronchospasm may occur in patients with bronchial asthma or a history of asthmatic complaints, sometimes with fatal outcome.

Frequency not known: dyspnoea.

Gastrointestinal disorders

Uncommon: diarrhoea, nausea, vomiting

Frequency not known: constipation, dry mouth

Skin and subcutaneous tissue disorders

Rare: alopecia, purpura, psoriasiform skin reactions, exacerbation of psoriasis, rash

Very rare: isolated cases of hyperhidrosis has been reported.

Musculoskeletal system and connective tissue disorders

Frequency not known: arthralgia

Renal and urinary disorders

Frequency not known: reduced renal blood flow and GFR

Reproductive system and breast disorders

Frequency not known: impotence

General disorders and administration site conditions

Common: fatigue and/or lassitude (often transient)

Reporting of suspected adverse reactions

Reporting suspected adverse reactions after authorisation of the medicinal product is important. It allows continued monitoring of the benefit/risk balance of the medicinal product. Healthcare professionals are asked to report any suspected adverse reactions via Pharmacovigilance

Electronic Reporting System (PvERS) <https://pv.pharmacyboardkenya.org/>

4.9 Overdose

Toxicity:

Propranolol is known to cause severe toxicity when used in overdose. Patients should be informed of the signs of overdose and advised to seek urgent medical assistance if an overdose of propranolol has been taken.

Clinical features:

Cardiac

Bradycardia, hypotension, pulmonary oedema, syncope and cardiogenic shock may develop. QRS complex prolongation, ventricular tachycardia, first to third degree AV block, ventricular fibrillation or asystole may also occur. Development of

cardiovascular complications is more likely if other cardioactive drugs, especially calcium channel blockers, digoxin, cyclic antidepressants or neuroleptics have also been ingested. Older patients and those with underlying ischaemic heart disease are at risk of developing severe cardiovascular compromise.

CNS

Drowsiness, confusion, seizures, hallucinations, dilated pupils and in severe cases coma may occur. Neurological signs such as coma or absence of pupil reactivity are unreliable prognostic indicators during resuscitation.

Other features

Bronchospasm, hyperkalaemia and occasionally CNS-mediated respiratory depression may occur.

Management:

In cases of overdose or extreme falls in the heart rate or blood pressure, treatment with propranolol must be stopped. Management should include general symptomatic and supportive measures including a clear airway and monitoring of vital signs until stable. In symptomatic patients, or patients with an abnormal ECG, early discussion with critical care should be considered.

Consult national clinical guidance for further information on the management of overdose.

5. Pharmacological properties

5.1 Pharmacodynamic properties

Pharmacotherapeutic group: Beta blocking agents, non-selective (beta blocker)

ATC Code: C07AA05

Propranolol is a competitive antagonist at both the beta₁- and beta₂ adrenoceptors. It has no agonist activity at the beta adrenoceptor, but has membrane stabilising activity at concentrations exceeding 1 to 3 mg/litre, though such concentrations are rarely achieved during oral therapy. Competitive beta blockade has been demonstrated in man by a parallel shift to the right in the dose-heart rate response curve to beta agonists such as isoprenaline. Propranolol as with other beta-blockers, has negative inotropic effects, and is therefore contraindicated in uncontrolled heart failure. Propranolol is a racemic mixture and the active form is the S (-) isomer of propranolol. With the exception of inhibition of the conversion of thyroxine to triiodothyronine, it is unlikely that any additional ancillary properties possessed by R (+) propranolol, in comparison with the racemic mixture, will give rise to different therapeutic effects. Propranolol is effective and well tolerated in most ethnic populations, although the response may be less in black patients.

5.2 Pharmacokinetic properties

Following intravenous administration, the plasma half-life of propranolol is about 2 hours and the ratio of metabolites to parent drug in the blood is lower than after oral administration. In particular 4-hydroxypropranolol is not present after intravenous administration. Propranolol is completely absorbed after oral administration and peak plasma concentrations occur 1 to 2 hours after dosing in fasting patients. The liver removes up to 90% of an oral dose with an elimination

half-life of 3 to 6 hours. Propranolol is widely and rapidly distributed throughout the body with highest levels occurring in the lungs, liver, kidney, brain and heart. Propranolol is highly protein bound (80 to 95%).

5.3 Preclinical safety data

Non-clinical data reveal no special hazard for humans based on conventional studies of safety pharmacology, repeated dose toxicity, local tolerance, genotoxicity, carcinogenic potential and toxicity to reproduction.

6. Pharmaceutical particulars

6.1 List of excipients

1. Lactose
2. Maize Starch
3. Micro crystalline Cellulose powder
4. Povidone K 30
5. Methyl Paraben
6. Propyl Paraben
7. Purified Water
8. Purified Talc
9. Magnesium Stearate
10. Aerosil
11. Sodium starch Glycolate

6.2 Incompatibilities

Not Applicable

6.3 Shelf life

36 months.

6.4 Special precautions for storage

Store at the temperature not exceeding 30°C. Protect from light and moisture. Keep medicines out of reach of children.

6.5 Nature and contents of container

10 Tablets packed in one ALU-PVC blister. Such 10-blister packed in carton with insert.

6.6 Special precautions for disposal and other handling

No special requirements

7. MARKETING AUTHORISATION HOLDER AND MANUFACTURER

Marketing Authorisation Holder:
ZAIN PHARMA LTD.

Plot No: 209/13741, Colchester Park,
Go-Down No.1, 2, 3, Off Mombasa Road,
Behind Nice and Lovely House,
P.O. Box: 100167-00101, Nairobi, Kenya

8. Marketing Authorization Number:

H2026/CTD12708/27521

9. Date of First <Registration> / Renewal of The <Registration>

Not Applicable

10. Date of Revision of the Text:

20/08/2026