

United Pharmaceuticals

MONTEER® Amlodipine Besylate and Atorvastatin Calcium

Description:

MONTEER® (Amlodipine Besylate and Atorvastatin Calcium) is a combination of two drugs, a dihydropyridine Calcium antagonist (Calcium ion antagonist slow-channel blocker) Amlodipine (Antihypertensive/antianginal agent) and a HMG-CoA reductase inhibitor Atorvastatin (cholesterol lowering agent). The Amlodipine component of **MONTEER®** inhibits the transmembrane influx of Calcium ions into vascular smooth muscle and cardiac muscle. The Atorvastatin component of **MONTEER®** is a selective, competitive inhibitor of HMG-CoA reductase, the rate-limiting enzyme that converts 3-hydroxy-3-methylglutaryl-coenzyme A to mevalonate, a precursor of steroids including cholesterol.

Properties:

Absorption:
Following oral administration of **MONTEER®**, peak plasma concentrations of Amlodipine and Atorvastatin are seen at 6 to 12 hours and 1 to 2 hours post-dosing, respectively. The rate and extent of absorption (bioavailability) of Amlodipine and Atorvastatin from **MONTEER®** are not significantly different from the bioavailability of Amlodipine and Atorvastatin administered separately.

The bioavailability of Amlodipine from **MONTEER®** was not affected by food, although food decreases the rate and extent of absorption of Atorvastatin from **MONTEER®** by approximately 32% and 11%, respectively, as it does with Atorvastatin when given alone. LDL-C reduction is similar whether Atorvastatin is given with or without food.

Distribution:

Amlodipine drug is bound to plasma proteins in hypertensive patients. Steady-state plasma levels of Amlodipine are reached after 7 to 8 days of consecutive daily dosing.

Atorvastatin is 98% bound to plasma proteins. A blood/plasma ratio of approximately 0.25 indicates poor drug penetration into red blood cells.

Metabolism:

Amlodipine is extensively (about 90%) converted to inactive metabolites via hepatic metabolism.

Atorvastatin is extensively metabolized to ortho- and para-hydroxylated derivatives and various beta oxidation products in vitro inhibition of HMG-CoA reductase by ortho- and para-hydroxylated metabolites are equivalent to that of Atorvastatin.

Excretion:

Elimination of Amlodipine from the plasma is biphasic with a terminal elimination half-life of about 30 - 50 hours. 10% of the parent Amlodipine compound and 60% of the metabolites of Amlodipine are excreted in the urine. Atorvastatin and its metabolites are eliminated primarily in bile following hepatic and/or extra-hepatic metabolites. Less than 2% of a dose of Atorvastatin is recovered in urine following oral administration.

Indications:

MONTEER® is indicated in patients for whom treatment with Amlodipine and Atorvastatin is appropriate.

Amlodipine:

1. Hypertension: Amlodipine is indicated for the treatment of hypertension. It may be used alone or with combination with other antihypertensive agents.
2. Coronary Artery Disease (CAD):
 - Chronic Stable Angina: Amlodipine is indicated for the treatment of chronic stable angina. Amlodipine may be used alone or in combination with other antianginal or antihypertensive agents.
 - Vasoospastic Angina (Prinzmetal's or Variant Angina): Amlodipine is indicated for the treatment of confirmed or suspected Vasoospastic angina. Amlodipine may be used as monotherapy or in combination with other antianginal drugs.
 - Angiographically Documented CAD: In patients with recently documented CAD by angiography and without heart failure or an ejection fraction <40%, Amlodipine is indicated to reduce the risk of hospitalization due to angina and to reduce the risk of a coronary revascularization procedure.

Atorvastatin:

1. Prevention of Cardiovascular Disease:
 - In adult patients without clinically evident of coronary heart disease, but with multiple risk factors such as age, smoking, hypertension, low HDL-C level or a family history of early coronary heart disease, Atorvastatin is indicated to:
 - Reduce the risk of myocardial infarction.
 - Reduce the risk of stroke.
 - Reduce the risk for revascularization procedures and angina.
 - In patients with type 2 diabetes, and without clinically evident of coronary heart disease, but with multiple risk factors such as retinopathy, albuminuria, smoking or hypertension, Atorvastatin is indicated to:
 - Reduce the risk of myocardial infarction.
 - Reduce the risk of stroke.
 - In patients with clinically evident of coronary heart disease, Atorvastatin is indicated to:
 - Reduce the risk of non-fatal myocardial infarction.
 - Reduce the risk of fatal and non-fatal stroke.
 - Reduce the risk for revascularization procedures.
 - Reduce the risk of hospitalization for CHF.
 - Reduce the risk of angina.
2. Heterozygous Familial and Nonfamilial Hypercholesterolemia: Atorvastatin is indicated as an adjunct to diet to reduce elevated total-C, LDL-C, apo B and TG levels and to increase HDL-C in patients with primary Hypercholesterolemia (heterozygous familial and nonfamilial) and mixed dyslipidemia (Fredrickson Types IIa and IIb).
3. Elevated Serum TG Levels: Atorvastatin is indicated as an adjunct to diet for the treatment of patients with elevated serum TG levels (Fredrickson type IV).
4. Primary Dysbetalipoproteinemia: Atorvastatin is indicated for the treatment of patients with primary dysbetalipoproteinemia (Fredrickson Type III) who do not respond adequately to diet.
5. Homozygous Familial Hypercholesterolemia: Atorvastatin is indicated to reduce total C and LDL-C in patients with homozygous familial hypercholesterolemia as an adjunct to other lipid-lowering treatments (e.g. LDL apheresis) or if such treatments are unavailable.
6. Pediatric patients: Atorvastatin is indicated as an adjunct to diet to reduce total C, LDL-C and apo B levels in boys and postmenarcheal girls, 10 to 17 years of age, with heterozygous familial hypercholesterolemia if after an adequate trial of diet therapy the following findings are present:
 - a. LDL-C remains ≥ 190 mg/dL, or LDL-C remains ≥ 160 mg/dL.
 - b. There is a positive family history of premature cardiovascular disease or two or more other CVD risk factors are present in the pediatric patients.Therapy with lipid altering agents should be a component of multiple-risk-factor intervention in individuals at increased risk for atherosclerotic vascular disease due to hypercholesterolemia. Lipid-altering agents should be used in addition to diet restricted in saturated fat and cholesterol, only when the response to diet and other nonpharmacological measures has been inadequate.

Dosage and administration:

Dosage of **MONTEER®** must be individualized on the basis of both effectiveness and tolerance for each individual component in the treatment of hypertension/angina and hyperlipidemia.

Adult:

The usual initial antihypertensive oral dose of Amlodipine is 5 mg once daily with a maximum dose of 10 mg once daily. Small, fragile, or elderly individ-

als or patients with hepatic insufficiency may be started on 2.5 mg once day and this dose may be used when adding Amlodipine to other antihypertensive therapy. Dosage should be adjusted according to each patient's need. In general, titration should proceed over 7 to 14 days so that the physician can fully assess the patient's response to each dose level. Titration may proceed more rapidly, however, if clinically warranted, provided the patient is assessed frequently. The recommended dose of Amlodipine for chronic stable or vasospastic angina is 5-10 mg, with the lower dose suggested in the elderly and in patients with hepatic insufficiency. Most patients will require 10 mg for adequate effect. The recommended dose range of Amlodipine for patients with coronary artery disease is 5-10 mg once daily. In clinical studies the majority of patients required 10 mg.

- Children: The effective antihypertensive oral dose of Amlodipine in pediatric patients ages 6-17 years is 2.5 mg to 5 mg once daily. Doses in excess of 5 mg daily have not been studied in pediatric patients.

Atorvastatin (Hyperlipidemia):

The patient should be placed on a standard cholesterol-lowering diet before receiving Atorvastatin and should continue on this diet during treatment with Atorvastatin.

Hypercholesterolemia (Heterozygous Familial and Nonfamilial) and Mixed Dyslipidemia (Fredrickson Types IIa and IIb):

The recommended starting dose of Atorvastatin is 10 or 20mg once daily. Patients who require a large reduction in LDL-C (more than 45%) may be started at 40 mg once daily. The dosage range of Atorvastatin is 10 to 80 mg once daily. Atorvastatin can be administered as a single dose at any time of the day, with or without food. The starting dose and maintenance doses of Atorvastatin should be individualized according to patient characteristics such as goal of therapy and response. After initiation and/or upon titration of Atorvastatin, lipid levels should be analyzed within 2 to 4 weeks. Patients taking cyclosporine, clarithromycin or a combination of ritonavir plus saquinavir or lopinavir plus ritonavir, for doses of Atorvastatin:

Since the goal of treatment is to lower LDL-C, the NCEP recommends that LDL-C levels be used to initiate and assess treatment response. Only if LDL-C levels are not available, should total-C be used to monitor therapy. Heterozygous Familial Hypercholesterolemia in Pediatric Patients (10-17 years of age).

The recommended starting dose of Atorvastatin is 10mg/day; the maximum recommended dose is 20 mg/day (doses greater than 20mg have not been studied in this patient population). Doses should be individualized according to the recommended goal of therapy. Adjustments should be made at intervals of 4 weeks or more.

Homozygous Familial Hypercholesterolemia:

The dosage of Atorvastatin in patients with homozygous familial hypercholesterolemia is 10 to 80mg daily. Atorvastatin should be used as an adjunct to other lipid-lowering treatments (e.g. LDL apheresis) in these patients or if such treatments are unavailable.

Concomitant Lipid Lowering Therapy:

Atorvastatin may be used in combination with a bile acid binding resin for additive effect. The combination of HMG-CoA reductase inhibitors and fibrates should generally be avoided.

Dosage in Patients with Renal insufficiency: Renal disease does not affect the plasma concentrations nor LDL-C reduction of Atorvastatin; thus, dosage adjustment in patients with renal dysfunction is not necessary. In patients with renal insufficiency taking Cyclosporine, Clarithromycin or a combination of Ritonavir plus Saquinavir or Lopinavir plus Ritonavir.

In patients taking cyclosporine, therapy should be limited to Atorvastatin 10mg once daily. In patients taking Clarithromycin or in patients with HIV taking a combination of ritonavir plus saquinavir or lopinavir plus ritonavir, for doses of Atorvastatin: the lowest dose necessary of Atorvastatin is employed.

MONTEER® may be substituted for its individually titrated components. Patients may be given the equivalent dose of **MONTEER®** or a dose of **MONTEER®** with increased amounts of Amlodipine, Atorvastatin or both for additional antianginal effects, blood pressure lowering, or lipid lowering effect.

MONTEER® may be used to provide additional therapy for patients already on one of its components. As initial therapy for one indication and continuation of treatment of the other, the recommended starting dose of **MONTEER®** should be selected based on the continuation of the component being used and the recommended starting dose for the added monotherapy.

MONTEER® may be used to initiate treatment in patients with hyperlipidemia and either hypertension or angina. The recommended starting dose of **MONTEER®** should be based on the appropriate combination of recommendations for the monotherapies.

Pediatric Use: There have been no studies conducted to determine the safety or effectiveness of **MONTEER®** in pediatric populations.

Geriatric Use: There have been no studies conducted to determine the safety or effectiveness of **MONTEER®** in geriatric populations.

Use in Patients with Recent Stroke or TIA: The studies show a higher incidence of hemorrhagic stroke while taking Atorvastatin.

Contraindications:

- **MONTEER®** contains Atorvastatin and is therefore contraindicated in patients with active liver disease or unexplained persistent elevations of serum transaminases.

- **MONTEER®** is contraindicated in patients with known hypersensitivity to any component of this medication.

Precautions:

General:

- Since the vasodilation induced by the Amlodipine component of **MONTEER®** is gradual in onset, acute hypotension has rarely been reported after oral administration of Amlodipine. Nonetheless, caution should be exercised when administering **MONTEER®** as with any other peripheral vasodilator particularly in patients with severe aortic stenosis.

- Before instituting therapy with **MONTEER®**, an attempt should be made to control hypercholesterolemia with appropriate diet, exercise, and weight reduction in obese patients, and to treat other underlying medical problems.

Use in Patients with Congestive Heart Failure: In general, Calcium channel blockers should be used with caution in patients with heart failure.

Beta-Blocker Withdrawal: The Amlodipine component of **MONTEER®** is not a beta-blocker and therefore gives no protection against the dangers of abrupt beta-blocker withdrawal, any such withdrawal should be by gradual reduction of the dose of beta-blocker.

Endocrine Function: HMG-CoA reductase inhibitors, such as the Atorvastatin component of **MONTEER®** interfere with cholesterol synthesis and theoretically might blunt adrenal and/or gonadal steroid production. Clinical studies have shown that Atorvastatin does not reduce basal plasma cortisol concentration or impair adrenal reserve. The effects of HMG-CoA reductase inhibitors on male fertility have not been studied in adequate numbers of patients. The effects, if any, on the pituitary-gonadal axis in premenopausal women are unknown. Caution should be exercised if an HMG-CoA reductase inhibitor is administered concomitantly with drugs that may decrease the levels or activity of endogenous steroid hormones, such as ketoconazole, spiroinolactone and cimetidine.

CNS Toxicity: No CNS lesions have been observed in mice after chronic treatment for up to 2 years at doses of Atorvastatin Calcium equivalent to up to 400 mg Atorvastatin/kg/day or in rats at doses equivalent to up to 100 mg Atorvastatin/kg/day. These doses were based to 11 times (mouse) and 8 to 16 times (rat) the human AUG (0-24) based on the maximum recommended human dose of 80mg



