

HIGHLIGHTS OF PRESCRIBING INFORMATION

These highlights do not include all the information needed to use ROSUVASTATIN CALCIUM TABLETS safely and effectively. See full prescribing information for ROSUVASTATIN CALCIUM TABLETS.

ROSUVASTATIN CALCIUM tablets for oral use
Initial U.S. Approval: 2003

RECENT MAJOR CHANGES	
Indications and Usage (1.2)	5/2016
Contraindications (4)	5/2016

INDICATIONS AND USAGE

Rosuvastatin calcium tablets are an HMG Co-A reductase inhibitor indicated for:

- adult patients with hypertriglyceridemia as an adjunct to diet (1.3)
- adult patients with primary dysbetalipoproteinemia (Type III hyperlipoproteinemia) as an adjunct to diet (1.4)
- adult patients with homozygous familial hypercholesterolemia (HoFH) to reduce LDL-C, total-C, and ApoB (1.5)

Limitations of use (1.8): Rosuvastatin calcium tablets have not been studied in Fredrickson Type I and V dyslipidemias.

DOSAGE AND ADMINISTRATION

- Rosuvastatin calcium tablets can be taken with or without food, at any time of day. (2.1)
- Dose range: 5 to 40 mg once daily. Use 40 mg dose only for patients not reaching LDL-C goal with 20 mg. (2.1)
- Adult HoFH: Starting dose 20 mg/day. (2.1)

DOSAGE FORMS AND STRENGTHS

Tablets: 5 mg, 10 mg, 20 mg, and 40 mg (3)

CONTRAINDICATIONS

- Known hypersensitivity to product components (4)
- Active liver disease, which may include unexplained persistent elevations in hepatic transaminase levels (4)
- Pregnancy (4, 8.1, 8.3)
- Lactation (4, 8.2)

WARNINGS AND PRECAUTIONS

- **Skeletal muscle effects (e.g., myopathy and rhabdomyolysis):** Risks increase with use of 40 mg dose, advanced age (≥65), hypothyroidism, renal impairment, and combination use

with cyclosporine, atazanavir/ritonavir, lopinavir/ritonavir, or simeprevir. Cases of myopathy and rhabdomyolysis with acute renal failure secondary to myoglobinuria have been reported. Advise patients to promptly report to their physician unexplained and/or persistent muscle pain, tenderness, or weakness and discontinue rosuvastatin if signs or symptoms appear. (5.1, 7.5, 7.6)

- **Liver enzyme abnormalities:** Persistent elevations in hepatic transaminases can occur. Perform liver enzyme tests before initiating therapy and as clinically indicated thereafter. (5.2)

ADVERSE REACTIONS

Most frequent adverse reactions (rate ≥2%) are headache, myalgia, abdominal pain, asthenia, and nausea. (6.1)

To report SUSPECTED ADVERSE REACTIONS, contact Citron Pharma LLC. at 1-855-5-CITRON (1-855-524-8766) or FDA at 1-800-FDA-1088 or www.fda.gov/medwatch.

DRUG INTERACTIONS

- **Cyclosporine:** Combination increases rosuvastatin exposure. Limit rosuvastatin dose to 5 mg once daily. (2.4, 5.1, 7.1, 12.3)
- **Gemfibrozil:** Combination should be avoided. If used together, limit rosuvastatin dose to 10 mg once daily. (2.4, 5.1, 7.2)
- **Atazanavir/ritonavir, lopinavir/ritonavir, or simeprevir:** Combination increases rosuvastatin exposure. Limit rosuvastatin dose to 10 mg once daily. (2.4, 5.1, 7.3, 12.3)
- **Coumarin anticoagulants:** Combination prolongs INR. Achieve stable INR prior to starting rosuvastatin calcium tablets. Monitor INR frequently until stable upon initiation or alteration of rosuvastatin therapy. (5.3, 7.4)
- **Concomitant lipid-lowering therapies:** Use with fibrates or lipid-modifying doses (≥1 g/day) of niacin increases the risk of adverse skeletal muscle effects. Caution should be used when prescribing with rosuvastatin. (5.1, 7.5, 7.6)

USE IN SPECIFIC POPULATIONS

- **Females of reproductive potential:** Advise females of reproductive potential to use effective contraception during treatment with rosuvastatin (8.3)
- **Severe renal impairment (not on hemodialysis):** Starting dose is 5 mg, not to exceed 10 mg. (2.5, 5.1, 8.6)
- **Asian population:** Consider 5 mg starting dose. (2.3, 8.8)

See 17 for PATIENT COUNSELING INFORMATION and FDA-approved patient labeling.

Pediatric use information for patients 7 to 17 years of age is approved for AstraZeneca's CRESTOR (rosuvastatin calcium) tablets. However, due to AstraZeneca's marketing exclusivity rights, this drug product is not labeled with that pediatric information.

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FULL PRESCRIBING INFORMATION: CONTENTS*

1 INDICATIONS AND USAGE

- Hypertriglyceridemia
- Primary Dysbetalipoproteinemia (Type III Hyperlipoproteinemia)
- Adult Patients with Homozygous Familial Hypercholesterolemia
- Limitations of Use

2 DOSAGE AND ADMINISTRATION

- General Dosing Information
- Dosing in Asian Patients
- Use with Concomitant Therapy
- Dosing in Patients with Severe Renal Impairment

3 DOSAGE FORMS AND STRENGTHS

4 CONTRAINDICATIONS

5 WARNINGS AND PRECAUTIONS

- Skeletal Muscle Effects
- Liver Enzyme Abnormalities
- Concomitant Coumarin Anticoagulants
- Proteinuria and Hematuria
- Endocrine Effects

6 ADVERSE REACTIONS

- Clinical Studies Experience
- Postmarketing Experience

7 DRUG INTERACTIONS

- Cyclosporine
- Gemfibrozil
- Protease Inhibitors
- Coumarin Anticoagulants
- Niacin

7.6 Fenofibrate

7.7 Colchicine

8 USE IN SPECIFIC POPULATIONS

- Pregnancy
- Lactation
- Females and Males of Reproductive Potential
- Pediatric Use
- Geriatric Use
- Renal Impairment
- Hepatic Impairment
- Asian Patients

10 OVERDOSAGE

11 DESCRIPTION

12 CLINICAL PHARMACOLOGY

- Mechanism of Action
- Pharmacokinetics
- Pharmacogenomics

13 NONCLINICAL TOXICOLOGY

- Carcinogenesis, Mutagenesis, Impairment of Fertility
- Animal Toxicology and/or Pharmacology

14 CLINICAL STUDIES

- Hypertriglyceridemia
- Primary Dysbetalipoproteinemia (Type III Hyperlipoproteinemia)
- Homozygous Familial Hypercholesterolemia

16 HOW SUPPLIED/STORAGE AND HANDLING

17 PATIENT COUNSELING INFORMATION

*Sections or subsections omitted from the full prescribing information are not listed

FULL PRESCRIBING INFORMATION

1 INDICATIONS AND USAGE

Pediatric use information for patients 7 to 17 years of age is approved for AstraZeneca's CRESTOR (rosuvastatin calcium) tablets. However, due to AstraZeneca's marketing exclusivity rights, this drug product is not labeled with that pediatric information.

1.3 Hypertriglyceridemia

Rosuvastatin calcium tablets are indicated as adjunctive therapy to diet for the treatment of adult patients with hypertriglyceridemia.

1.4 Primary Dysbetalipoproteinemia (Type III Hyperlipoproteinemia)

Rosuvastatin calcium tablets are indicated as an adjunct to diet for the treatment of adult patients with primary dysbetalipoproteinemia (Type III Hyperlipoproteinemia).

1.5 Adult Patients with Homozygous Familial Hypercholesterolemia

Rosuvastatin calcium tablets are indicated as adjunctive therapy to other lipid-lowering treatments (e.g., LDL apheresis) or alone if such treatments are unavailable to reduce LDL-C, Total-C, and ApoB in adult patients with homozygous familial hypercholesterolemia.

1.8 Limitations of Use

Rosuvastatin calcium tablets have not been studied in Fredrickson Type I and V dyslipidemias.

2 DOSAGE AND ADMINISTRATION

2.1 General Dosing Information

The dose range for rosuvastatin calcium tablets in adults is 5 to 40 mg orally once daily. The usual starting dose is 10 to 20 mg once daily. The usual starting dose in adult patients with homozygous familial hypercholesterolemia is 20 mg once daily.

The maximum rosuvastatin calcium tablets dose of 40 mg should be used only for those patients who have not achieved their LDL-C goal utilizing the 20 mg dose [see *Warnings and Precautions (5.1)*].

Rosuvastatin calcium tablets can be administered as a single dose at any time of day, with or without food. The tablet should be swallowed whole.

When initiating rosuvastatin calcium tablets therapy or switching from another HMG-CoA reductase inhibitor therapy, the appropriate rosuvastatin calcium tablets starting dose should first be utilized, and only then titrated according to the patient's response and individualized goal of therapy.

After initiation or upon titration of rosuvastatin calcium tablets, lipid levels should be analyzed within 2 to 4 weeks and the dosage adjusted accordingly.

Pediatric use information for patients 7 to 17 years of age is approved for AstraZeneca's CRESTOR (rosuvastatin calcium) tablets. However, due to AstraZeneca's marketing exclusivity rights, this drug product is not labeled with that pediatric information.

2.3 Dosing in Asian Patients

In Asian patients, consider initiation of rosuvastatin calcium tablets therapy with 5 mg once daily due to increased rosuvastatin plasma concentrations. The increased systemic exposure should be taken into consideration when treating Asian patients not adequately controlled at doses up to 20 mg/day [see *Use in Specific Populations (8.8)* and *Clinical Pharmacology (12.3)*].

2.4 Use with Concomitant Therapy

Patients taking cyclosporine

The dose of rosuvastatin calcium tablets should not exceed 5 mg once daily [see *Warnings and Precautions (5.1)*, *Drug Interactions (7.1)* and *Clinical Pharmacology (12.3)*].

Patients taking gemfibrozil

Avoid concomitant use of rosuvastatin calcium tablets with gemfibrozil. If concomitant use cannot be avoided, initiate rosuvastatin calcium tablets at 5 mg once daily. The dose of rosuvastatin calcium tablets should not exceed 10 mg once daily [see *Warnings and Precautions (5.1)*, *Drug Interactions (7.2)* and *Clinical Pharmacology (12.3)*].

Patients taking atazanavir and ritonavir, lopinavir and ritonavir, or simeprevir

Initiate rosuvastatin calcium tablets therapy with 5 mg once daily. The dose of rosuvastatin calcium tablets should not exceed 10 mg once daily [see *Warnings and Precautions (5.1)*, *Drug Interactions (7.3)* and *Clinical Pharmacology (12.3)*].

2.5 Dosing in Patients with Severe Renal Impairment

For patients with severe renal impairment (CL_{CR} <30 mL/min/1.73 m²) not on hemodialysis, dosing of rosuvastatin calcium tablets should be started at 5 mg once daily and not exceed 10 mg once daily [see *Use in Specific Populations (8.6)* and *Clinical Pharmacology (12.3)*].

3 DOSAGE FORMS AND STRENGTHS

Rosuvastatin Calcium Tablets are available containing 5 mg, 10 mg, 20 mg or 40 mg of rosuvastatin.

5 mg: Pink, oval shaped, biconvex film-coated tablets debossed with '1' on one side and '29' on the other side.

10 mg: Pink, round, biconvex film-coated tablets debossed with '1' on one side and '30' on the other side.

20 mg: Pink, round, biconvex film-coated tablets debossed with '1' on one side and '31' on the other side.

40 mg: Pink, oval shaped, biconvex film-coated tablets debossed with '1' on one side and '32' on the other side.

4 CONTRAINDICATIONS

Rosuvastatin calcium tablets are contraindicated in the following conditions:

- Patients with a known hypersensitivity to any component of this product. Hypersensitivity reactions including rash, pruritus, urticaria, and angioedema have been reported with rosuvastatin [see *Adverse Reactions (6.1)*].
- Patients with active liver disease, which may include unexplained persistent elevations of hepatic transaminase levels [see *Warnings and Precautions (5.2)*].
- Pregnancy [see *Use in Specific Populations (8.1, 8.3)*].
- Lactation. Limited data indicate that rosuvastatin is present in human milk. Because statins have the potential for serious adverse reactions in nursing infants, women who require rosuvastatin treatment should not breastfeed their infants [see *Use in Specific Populations (8.2)*].

5 WARNINGS AND PRECAUTIONS

5.1 Skeletal Muscle Effects

Cases of myopathy and rhabdomyolysis with acute renal failure secondary to myoglobinuria have been reported with HMG-CoA reductase inhibitors, including rosuvastatin. These risks can occur at any dose level, but are increased at the highest dose (40 mg).

Rosuvastatin should be prescribed with caution in patients with predisposing factors for myopathy (e.g., age ≥65 years, inadequately treated hypothyroidism, renal impairment).

The risk of myopathy during treatment with rosuvastatin may be increased with concurrent administration of some other lipid-lowering therapies (fibrates or niacin), gemfibrozil, cyclosporine, atazanavir/ritonavir, lopinavir/ritonavir, or simeprevir [see *Dosage and Administration (2)* and *Drug Interactions (7)*]. Cases of myopathy, including rhabdomyolysis, have been reported with HMG-CoA reductase inhibitors, including rosuvastatin, coadministered with colchicine, and caution should be exercised when prescribing rosuvastatin with colchicine [see *Drug Interactions (7.7)*].

Rosuvastatin therapy should be discontinued if markedly elevated creatine kinase levels occur or myopathy is diagnosed or suspected. Rosuvastatin therapy should also be temporarily withheld in any patient with an acute, serious condition suggestive of myopathy or predisposing to the development of renal failure secondary to rhabdomyolysis (e.g., sepsis, hypotension, dehydration, major surgery, trauma, severe metabolic, endocrine, and electrolyte disorders, or uncontrolled seizures).

There have been rare reports of immune-mediated necrotizing myopathy (IMNM), an autoimmune myopathy, associated with statin use. IMNM is characterized by: proximal muscle weakness and elevated serum creatine kinase, which persist despite discontinuation of statin treatment; muscle biopsy showing necrotizing myopathy without significant inflammation; improvement with immunosuppressive agents.

All patients should be advised to promptly report to their physician unexplained muscle pain, tenderness, or weakness, particularly if accompanied by malaise or fever or if muscle signs and symptoms persist after discontinuing rosuvastatin.

5.2 Liver Enzyme Abnormalities

It is recommended that liver enzyme tests be performed before the initiation of rosuvastatin, and if signs or symptoms of liver injury occur.

Increases in serum transaminases [AST (SGOT) or ALT (SGPT)] have been reported with HMG-CoA reductase inhibitors, including rosuvastatin. In most cases, the elevations were transient and resolved or improved on continued therapy or after a brief interruption in therapy. There were two cases of jaundice, for which a relationship to rosuvastatin therapy could not be determined, which resolved after discontinuation of therapy. There were no cases of liver failure or irreversible liver disease in these trials.

In a pooled analysis of placebo-controlled trials, increases in serum transaminases to >3 times the upper limit of normal occurred in 1.1% of patients taking rosuvastatin versus 0.5% of patients treated with placebo.

There have been rare postmarketing reports of fatal and non-fatal hepatic failure in patients taking statins, including rosuvastatin. If serious liver injury with clinical symptoms and/or hyperbilirubinemia or jaundice occurs during treatment with rosuvastatin, promptly interrupt therapy. If an alternate etiology is not found, do not restart rosuvastatin.

Rosuvastatin should be used with caution in patients who consume substantial quantities of alcohol and/or have a history of chronic liver disease [see *Clinical Pharmacology (12.3)*]. Active liver disease, which may include unexplained persistent transaminase elevations, is a contraindication to the use of rosuvastatin [see *Contraindications (4)*].

5.3 Concomitant Coumarin Anticoagulants

Caution should be exercised when anticoagulants are given in conjunction with rosuvastatin because of its potentiation of the effect of coumarin-type anticoagulants in prolonging the prothrombin time/INR. In patients taking coumarin anticoagulants and rosuvastatin concomitantly, INR should be determined before starting rosuvastatin and frequently enough during early therapy to ensure that no significant alteration of INR occurs [see *Drug Interactions (7.4)*].

5.4 Proteinuria and Hematuria

In the rosuvastatin clinical trial program, dipstick-positive proteinuria and microscopic hematuria were observed among rosuvastatin treated patients. These findings were more frequent in patients taking rosuvastatin 40 mg, when compared to lower doses of rosuvastatin or comparator HMG-CoA reductase inhibitors, though it was generally transient and was not associated with worsening renal function. Although the clinical significance of this finding is unknown, a dose reduction should be considered for patients on rosuvastatin therapy with unexplained persistent proteinuria and/or hematuria during routine urinalysis testing.

5.5 Endocrine Effects

Increases in HbA1c and fasting serum glucose levels have been reported with HMG-CoA reductase inhibitors, including rosuvastatin. Based on clinical trial data with rosuvastatin, in some instances these increases may exceed the threshold for the diagnosis of diabetes mellitus [see *Adverse Reactions (6.1)*].

Although clinical studies have shown that rosuvastatin alone does not reduce basal plasma cortisol concentration or impair adrenal reserve, caution should be exercised if rosuvastatin is administered concomitantly with drugs that may decrease the levels or activity of endogenous steroid hormones such as ketoneconazole, spiroinolactone, and cimetidine.

6 ADVERSE REACTIONS

The following serious adverse reactions are discussed in greater detail in other sections of the label:

- Rhabdomyolysis with myoglobinuria and acute renal failure and myopathy (including myositis) [see *Warnings and Precautions (5.1)*]
- Liver enzyme abnormalities [see *Warnings and Precautions (5.2)*]

6.1 Clinical Studies Experience

Because clinical studies are conducted under widely varying conditions, adverse reaction rates observed in the clinical studies of a drug cannot be directly compared to rates in the clinical studies of another drug and may not reflect the rates observed in clinical practice.

In the rosuvastatin controlled clinical trials database (placebo or active-controlled) of 5394 patients with a mean treatment duration of 15 weeks, 1.4% of patients discontinued due to adverse reactions. The most common adverse reactions that led to treatment discontinuation were:

- myalgia
- abdominal pain
- nausea

The most commonly reported adverse reactions (incidence ≥2%) in the rosuvastatin controlled clinical trial database of 5394 patients were:

- headache
- myalgia
- abdominal pain
- asthenia
- nausea

Adverse reactions reported in ≥2% of patients in placebo-controlled clinical studies and at a rate greater than placebo are shown in Table 1. These studies had a treatment duration of up to 12 weeks.

Table 1. Adverse Reactions¹ Reported in ≥2% of Patients Treated with Rosuvastatin and > Placebo in Placebo-Controlled Trials (% of Patients)

Adverse Reactions	Rosuvastatin 5 mg N=291	Rosuvastatin 10 mg N=283	Rosuvastatin 20 mg N=64	Rosuvastatin 40 mg N=106	Total Rosuvastatin 5 mg to 40 mg N=744	Placebo N=382
Headache	5.5	4.9	3.1	8.5	5.5	5.0
Nausea	3.8	3.5	6.3	0	3.4	3.1
Myalgia	3.1	2.1	6.3	1.9	2.8	1.3
Asthenia	2.4	3.2	4.7	0.9	2.7	2.6
Constipation	2.1	2.1	4.7	2.8	2.4	2.4

¹ Adverse reactions by COSTART preferred term.

Other adverse reactions reported in clinical studies were abdominal pain, dizziness, hypersensitivity (including rash, pruritus, urticaria, and angioedema) and pancreatitis. The following laboratory abnormalities have also been reported: dipstick-positive proteinuria and microscopic hematuria [see *Warnings and Precautions (5.4)*]; elevated creatine phosphokinase, transaminases, glucose, glutamyl transpeptidase, alkaline phosphatase, and bilirubin; and thyroid function abnormalities.

In a clinical trial, involving 981 patients treated with rosuvastatin 40 mg (n=700) or placebo (n=281) with a mean treatment duration of 1.7 years, 5.6% of subjects treated with rosuvastatin versus 2.8% of placebo-treated subjects discontinued due to adverse reactions. The most common adverse reactions that led to treatment discontinuation were: myalgia, hepatic enzyme increased, headache, and nausea.

Adverse reactions reported in ≥2% of patients and at a rate greater than placebo are shown in Table 2.

Table 2. Adverse Reactions¹ Reported in ≥2% of Patients Treated with Rosuvastatin and > Placebo in a Trial (% of Patients)

Adverse Reactions	Rosuvastatin 40 mg N=700	Placebo N=281
Myalgia	12.7	12.1

Adverse Reactions	Rosuvastatin 40 mg N=700	Placebo N=281
Arthralgia	10.1	7.1
Headache	6.4	5.3
Dizziness	4.0	2.8
Increased CPK	2.6	0.7
Abdominal pain	2.4	1.8
ALT >3x ULLN ²	2.2	0.7

¹ Adverse reactions by MedDRA preferred term.

² Frequency recorded as abnormal laboratory value.

In a clinical trial, 17,802 participants were treated with rosuvastatin 20 mg (n=8901) or placebo (n=8901) for a mean duration of 2 years. A higher percentage of rosuvastatin-treated patients versus placebo-treated patients, 6.6% and 6.2%, respectively, discontinued study medication due to an adverse event, irrespective of treatment causality. Myalgia was the most common adverse reaction that led to treatment discontinuation.

There was a significantly higher frequency of diabetes mellitus reported in patients taking rosuvastatin (2.8%) versus patients taking placebo (2.3%). Mean HbA1c was significantly increased by 0.1% in rosuvastatin-treated patients compared to placebo-treated patients. The number of patients with a HbA1c > 6.5% at the end of the trial was significantly higher in rosuvastatin-treated versus placebo-treated patients [see *Warnings and Precautions (5.5)*]. Adverse reactions reported in ≥2% of patients and at a rate greater than placebo are shown in Table 3.

Table 3. Adverse Reactions¹ Reported in ≥2% of Patients Treated with Rosuvastatin and > Placebo in a Trial (% of Patients)

Adverse Reactions	Rosuvastatin 20 mg N=8901	Placebo N=8901
Myalgia	7.6	6.6
Arthralgia	3.8	3.2
Constipation	3.3	3.0
Diabetes mellitus	2.8	2.3
Nausea	2.4	2.3

¹ Treatment-emergent adverse reactions by MedDRA preferred term.

8.8 Asian Patients

Pharmacokinetic studies have demonstrated an approximate 2-fold increase in median exposure to rosuvastatin in Asian subjects when compared with Caucasian controls. Rosuvastatin dosage should be adjusted in Asian patients [see *Dosage and Administration (2.3)* and *Clinical Pharmacology (12.3)*].

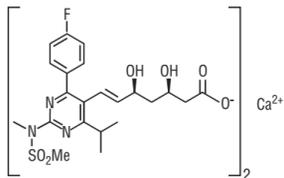
10 OVERDOSAGE

There is no specific treatment in the event of overdose. In the event of overdose, the patient should be treated symptomatically and supportive measures instituted as required. Hemodialysis does not significantly enhance clearance of rosuvastatin.

11 DESCRIPTION

Rosuvastatin calcium is a synthetic lipid-lowering agent for oral administration.

The chemical name for rosuvastatin calcium is bis[(E)-7-[4-(4-fluorophenyl)-6-isopropyl-2-[methyl(methylsulfonyl)amino]pyrimidin-5-yl](3R,5S)-3,5-dihydrohept-6-enoic acid] calcium salt with the following structural formula:



The empirical formula for rosuvastatin calcium is $(C_{22}H_{27}FN_3O_6S)_2Ca$ and the molecular weight is 1001.14. Rosuvastatin calcium is a white to off-white powder that is sparingly soluble in water and methanol, and slightly soluble in ethanol. Rosuvastatin calcium is a hydrophilic compound with a partition coefficient (octanol/water) of 0.13 at pH of 7.0.

Rosuvastatin calcium tablets for oral administration contain 5 mg, 10 mg, 20 mg or 40 mg of rosuvastatin and the following inactive ingredients: croscopollose, dibasic calcium phosphate anhydrous, hypromellose, iron oxide red, lactose monohydrate, magnesium stearate, microcrystalline cellulose, titanium dioxide, and triacetin.

12 CLINICAL PHARMACOLOGY

12.1 Mechanism of Action

Rosuvastatin is a selective and competitive inhibitor of HMG-CoA reductase, the rate-limiting enzyme that converts 3-hydroxy-3-methylglutaryl coenzyme A to mevalonate, a precursor of cholesterol. *In vivo* studies in animals, and *in vitro* studies in cultured animal and human cells have shown rosuvastatin to have a high uptake into, and selectivity for, action in the liver, the target organ for cholesterol lowering. In *in vivo* and *in vitro* studies, rosuvastatin produces its lipid-modifying effects in two ways. First, it increases the number of hepatic LDL receptors on the cell-surface to enhance uptake and catabolism of LDL. Second, rosuvastatin inhibits hepatic synthesis of VLDL, which reduces the total number of VLDL and LDL particles.

12.3 Pharmacokinetics

Absorption

In clinical pharmacology studies in man, peak plasma concentrations of rosuvastatin were reached 3 to 5 hours following oral dosing. Both C_{max} and AUC increased in approximate proportion to rosuvastatin dose. The absolute bioavailability of rosuvastatin is approximately 20%.

Administration of rosuvastatin with food did not affect the AUC of rosuvastatin.

The AUC of rosuvastatin does not differ following evening or morning drug administration.

Distribution

Mean volume of distribution at steady-state of rosuvastatin is approximately 134 liters. Rosuvastatin is 88% bound to plasma proteins, mostly albumin. This binding is reversible and independent of plasma concentrations.

Metabolism

Rosuvastatin is not extensively metabolized; approximately 10% of a radiolabeled dose is recovered as metabolite. The major metabolite is N-desmethyl rosuvastatin, which is formed principally by cytochrome P450 2C9, and *in vitro* studies have demonstrated that N-desmethyl rosuvastatin has approximately one-sixth to one-half the HMG-CoA reductase inhibitory activity of the parent compound. Overall, greater than 90% of active plasma HMG-CoA reductase inhibitory activity is accounted for by the parent compound.

Excretion

Following oral administration, rosuvastatin and its metabolites are primarily excreted in the feces (90%). The elimination half-life ($t_{1/2}$) of rosuvastatin is approximately 19 hours.

After an intravenous dose, approximately 28% of total body clearance was via the renal route, and 72% by the hepatic route.

Specific Populations

Race

A population pharmacokinetic analysis revealed no clinically relevant differences in pharmacokinetics among Caucasian, Hispanic, and Black or Afro-Caribbean groups. However, pharmacokinetic studies, including one conducted in the U.S., have demonstrated an approximate 2-fold elevation in median exposure (AUC and C_{max}) in Asian subjects when compared with a Caucasian control group.

Gender

There were no differences in plasma concentrations of rosuvastatin between men and women.

Pediatric use information for patients ages 8 to less than 10 years is approved for AstraZeneca's CRESTOR (rosuvastatin calcium) tablets. However, due to AstraZeneca's marketing exclusivity rights, this drug product is not labeled with that pediatric information.

Geriatric

There were no differences in plasma concentrations of rosuvastatin between the nonelderly and elderly populations (age ≥ 65 years).

Renal Impairment

Mild to moderate renal impairment ($CL_{cr} \geq 30$ mL/min/1.73 m²) had no influence on plasma concentrations of rosuvastatin. However, plasma concentrations of rosuvastatin increased to a clinically significant extent (about 3-fold) in patients with severe renal impairment ($CL_{cr} < 30$ mL/min/1.73 m²) not receiving hemodialysis compared with healthy subjects ($CL_{cr} > 80$ mL/min/1.73 m²).

Hemodialysis

Steady-state plasma concentrations of rosuvastatin in patients on chronic hemodialysis were approximately 50% greater compared with healthy volunteer subjects with normal renal function.

Hepatic Impairment

In patients with chronic alcohol liver disease, plasma concentrations of rosuvastatin were modestly increased.

In patients with Child-Pugh A disease, C_{max} and AUC were increased by 60% and 5%, respectively, as compared with patients with normal liver function. In patients with Child-Pugh B disease, C_{max} and AUC were increased 100% and 21%, respectively, compared with patients with normal liver function.

Drug-Drug Interactions

Rosuvastatin clearance is not dependent on metabolism by cytochrome P450 3A4 to a clinically significant extent.

Rosuvastatin is a substrate for certain transporter proteins including the hepatic uptake transporter organic anion-transporting polypeptide 1B1 (OATP1B1) and efflux transporter breast cancer resistance protein (BCRP). Concomitant administration of rosuvastatin with medications that are inhibitors of these transporter proteins (e.g., cyclosporine, certain HIV protease inhibitors) may result in increased rosuvastatin plasma concentrations and an increased risk of myopathy [see *Dosage and Administration (2.4)*]. It is recommended that prescribers consult the relevant product information when considering administration of such products together with rosuvastatin.

Table 4. Effect of Coadministered Drugs on Rosuvastatin Systemic Exposure

Coadministered drug and dosing regimen	Rosuvastatin		
	Dose (mg) ¹	Change in AUC	Change in C_{max}
		Mean Ratio (ratio with/without coadministered drug) No Effect = 1.0	
Cyclosporine – stable dose required (75 mg to 200 mg BID)	10 mg QD for 10 days	7.1 ²	11 ²
Atazanavir/ritonavir combination 300 mg/100 mg QD for 8 days	10 mg	3.1 ²	7 ²
Simeprevir 150 mg QD, 7 days	10 mg, single dose	2.8 ² (2.3 to 3.4) ³	3.2 ² (2.6 to 3.9) ³
Lopinavir/ritonavir combination 400 mg/100 mg BID for 17 days	20 mg QD for 7 days	2.1 ² (1.7 to 2.6) ³	5 ² (3.4 to 6.4) ³
Gemfibrozil 600 mg BID for 7 days	80 mg	1.9 ² (1.6 to 2.2) ³	2.2 ² (1.8 to 2.7) ³
Eltrombopag 75 mg QD, 5 days	10 mg	1.6 (1.4 to 1.7) ³	2 (1.8 to 2.3) ³
Darunavir 600 mg/ritonavir 100 mg BID, 7 days	10 mg QD for 7 days	1.5 (1.0 to 2.1) ³	2.4 (1.6 to 3.6) ³
Tipranavir/ritonavir combination 500 mg/200 mg BID for 11 days	10 mg	1.4 (1.2 to 1.6) ³	2.2 (1.8 to 2.7) ³
Dronedarone 400 mg BID	10 mg	1.4	
Itraconazole 200 mg QD, 5 days	10 mg or 80 mg	1.4 (1.2 to 1.6) ³	1.4 (1.2 to 1.5) ³
		1.3 (1.1 to 1.4) ³	1.2 (0.9 to 1.4) ³
Ezetimibe 10 mg QD, 14 days	10 mg QD for 14 days	1.2 (0.9 to 1.6) ³	1.2 (0.8 to 1.6) ³
Fosamprenavir/ritonavir 700 mg/100 mg BID for 7 days	10 mg	1.1	1.5
Fenofibrate 67 mg TID for 7 days	10 mg	..	1.2 (1.1 to 1.3) ³
Rifampicin 450 mg QD, 7 days	20 mg	..	
Aluminum & magnesium hydroxide combination antacid			
Administered simultaneously	40 mg	0.5 ² (0.4 to 0.5) ³	0.5 ² (0.4 to 0.6) ³
Administered 2 hours apart	40 mg	0.8 (0.7 to 0.9) ³	0.8 (0.7 to 1.0) ³
Ketoconazole 200 mg BID for 7 days	80 mg	1.0 (0.8 to 1.2) ³	1.0 (0.7 to 1.3) ³
Fluconazole 200 mg QD for 11 days	80 mg	1.1 (1.0 to 1.3) ³	1.1 (0.9 to 1.4) ³
Erythromycin 500 mg QID for 7 days	80 mg	0.8 (0.7 to 0.9) ³	0.7 (0.5 to 0.9) ³

¹ Single dose unless otherwise noted.

² Clinically significant [see *Dosage and Administration (2)* and *Warnings and Precautions (5)*]

³ Mean ratio with 90% CI (with/without coadministered drug, e.g., 1= no change, 0.7 = 30% decrease, 1.1=1.1 fold increase in exposure)

Table 5. Effect of Rosuvastatin Coadministration on Systemic Exposure to Other Drugs

Rosuvastatin Dosage Regimen	Coadministered Drug		
	Name and Dose	Change in AUC	Change in C_{max}
40 mg QD for 10 days	Warfarin ¹ 25 mg single dose	R-Warfarin 1.0 (1.0 to 1.1) ²	R-Warfarin 1.0 (0.9 to 1.0) ²
		S-Warfarin 1.1 (1.0 to 1.1) ²	S-Warfarin 1.0 (0.9 to 1.1) ²
40 mg QD for 12 days	Digoxin 0.5 mg single dose	1.0 (0.9 to 1.2) ²	1.0 (0.9 to 1.2) ²
40 mg QD for 28 days	Oral Contraceptive (ethinyl estradiol 0.035 mg & norgestrel 0.180, 0.215 and 0.250 mg) QD for 21 Days	EE 1.3 (1.2 to 1.3) ²	EE 1.3 (1.2 to 1.3) ²
		NG 1.3 (1.3 to 1.4) ²	NG 1.2 (1.1 to 1.3) ²

EE = ethinyl estradiol, NG = norgestrel

¹ Clinically significant pharmacodynamic effects [see *Warnings and Precautions (5.3)*]

² Mean ratio with 90% CI (with/without coadministered drug, e.g., 1= no change, 0.7=30% decrease, 1.1=1.1-fold increase in exposure)

12.5 Pharmacogenomics

Disposition of HMG-CoA reductase inhibitors, including rosuvastatin, involves OATP1B1 and other transporter proteins. Higher plasma concentrations of rosuvastatin have been reported in very small groups of patients (n=3 to 5) who have two reduced function alleles of the gene that encodes OATP1B1 (*SLCO1B1* 521T > C). The frequency of this genotype (i.e., *SLCO1B1* 521 C/C) is generally lower than 5% in most racial/ethnic groups. The impact of this polymorphism on efficacy and/or safety of rosuvastatin has not been clearly established.

13 NONCLINICAL TOXICOLOGY

13.1 Carcinogenesis, Mutagenesis, Impairment of Fertility

In a 104-week carcinogenicity study in rats at dose levels of 2, 20, 60, or 80 mg/kg/day by oral gavage, the incidence of uterine stromal polyps was significantly increased in females at 80 mg/kg/day at systemic exposure 20 times the human exposure at 40 mg/kg/day based on AUC. Increased incidence of polyps was not seen at lower doses.

In a 107-week carcinogenicity study in mice given 10, 60, or 200 mg/kg/day by oral gavage, an increased incidence of hepatocellular adenoma/carcinoma was observed at 200 mg/kg/day at systemic exposures 20 times the human exposure at 40 mg/kg/day based on AUC. An increased incidence of hepatocellular tumors was not seen at lower doses.

Rosuvastatin was not mutagenic or clastogenic with or without metabolic activation in the Ames test with *Salmonella typhimurium* and *Escherichia coli*, the mouse lymphoma assay, and the chromosomal aberration assay in Chinese hamster lung cells. Rosuvastatin was negative in the *in vivo* mouse micronucleus test.

In rat fertility studies with oral gavage doses of 5, 15, 50 mg/kg/day, males were treated for 9 weeks prior to and throughout mating and females were treated 2 weeks prior to mating and throughout mating until gestation day 7. No adverse effect on fertility was observed at 50 mg/kg/day (systemic exposures up to 10 times the human exposure at 40 mg/kg/day based on AUC). In testicles of dogs treated with rosuvastatin at 30 mg/kg/day for one month, spermatid giant cells were seen. Spermatid giant cells were observed in monkeys after 6-month treatment at 30 mg/kg/day in addition to vacuolation of seminiferous tubular epithelium. Exposures in the dog were 20 times and in the monkey 10 times the human exposure at 40 mg/kg/day based on body surface area. Similar findings have been seen with other drugs in this class.

13.2 Animal Toxicology and/or Pharmacology

Central Nervous System Toxicity

CNS vascular lesions, characterized by perivascular hemorrhages, edema, and mononuclear cell infiltration of perivascular spaces, have been observed in dogs treated with several other members of this drug class. A chemically similar drug in this class produced dose-dependent optic nerve degeneration (Wallerian degeneration of retinogeniculate fibers) in dogs, at a dose that produced plasma drug levels about 30 times higher than the mean drug level in humans taking the highest recommended dose. Edema, hemorrhage, and partial necrosis in the interstitium of the choroid plexus was observed in a female dog sacrificed moribund at day 24 at 90 mg/kg/day by oral gavage (systemic exposures 100 times the human exposure at 40 mg/kg/day based on AUC). Corneal opacity was seen in dogs treated for 52 weeks at 6 mg/kg/day by oral gavage (systemic exposures 20 times the human exposure at 40 mg/kg/day based on AUC). Cataracts were seen in dogs treated for 12 weeks by oral gavage at 30 mg/kg/day (systemic exposures 60 times the human exposure at 40 mg/kg/day based on AUC). Retinal dysplasia and retinal loss were seen in dogs treated for 4 weeks by oral gavage at 90 mg/kg/day (systemic exposures 100 times the human exposure at 40 mg/kg/day based on AUC). Doses ≤ 30 mg/kg/day (systemic exposures ≤ 60 times the human exposure at 40 mg/kg/day based on AUC) did not reveal retinal findings during treatment for up to one year.

Juvenile Toxicology Study

In a juvenile study, rats were dosed by oral gavage with 10 or 50 mg/kg/day from weaning for 9 weeks prior to pairing, throughout pairing and up to the day before necropsy for males or up to gestation day 7 for females. No effects on sexual development, testicular and epididymal appearance or fertility were observed at either dose level.

Pediatric information is approved for AstraZeneca's CRESTOR (rosuvastatin calcium) tablets. However, due to AstraZeneca's marketing exclusivity rights, this drug product is not labeled with that pediatric information.

14 CLINICAL STUDIES

14.3 Hypertriglyceridemia

Dose-Response Study: In a double-blind, placebo-controlled dose-response study in patients with baseline TG levels from 273 to 817 mg/dL, rosuvastatin calcium given as a single daily dose (5 to 40 mg) over 6 weeks significantly reduced serum TG levels (Table 9).

Table 9. Dose-Response in Patients with Primary Hypertriglyceridemia over 6 Weeks Dosing Median (Min, Max) Percent Change from Baseline

Dose	Placebo (n=26)	Rosuvastatin 5 mg (n=25)	Rosuvastatin 10 mg (n=23)	Rosuvastatin 20 mg (n=27)	Rosuvastatin 40 mg (n=25)
Triglycerides	1 (-40, 72)	-21 (-58, 38)	-37 (-65, 5)	-37 (-72, 11)	-43 (-80, -7)
nonHDL-C	2 (-13, 19)	-29 (-43, -8)	-49 (-59, -20)	-43 (-74, 12)	-51 (-62, -6)
VLDL-C	2 (-36, 53)	-25 (-62, 49)	-48 (-72, 14)	-49 (-83, 20)	-56 (-83, 10)
Total-C	1 (-13, 17)	-24 (-40, -4)	-40 (-51, -14)	-34 (-61, -11)	-40 (-51, -4)
LDL-C	5 (-30, 52)	-28 (-71, 2)	-45 (-59, 7)	-31 (-66, 34)	-43 (-61, -3)
HDL-C	-3 (-25, 18)	3 (-38, 33)	8 (-8, 24)	22 (-5, 50)	17 (-14, 63)

14.4 Primary Dysbetalipoproteinemia (Type III Hyperlipoproteinemia)

In a randomized, multicenter, double-blind crossover study, 32 patients (27 with $\epsilon 2/\epsilon 2$ and 4 with apo E mutation [Arg145Cys]) with primary dysbetalipoproteinemia (Type III hyperlipoproteinemia) entered a 6-week dietary lead-in period on the NCEP Therapeutic Lifestyle Change (TLC) diet. Following dietary lead-in, patients were randomized to a sequence of treatments in conjunction with the TLC diet for 6 weeks each: rosuvastatin 10 mg followed by rosuvastatin 20 mg or rosuvastatin 20 mg followed by rosuvastatin 10 mg. Rosuvastatin reduced non-HDL-C (primary end point) and circulating remnant lipoprotein levels. Results are shown in the table below.

Table 10. Lipid-modifying Effects of Rosuvastatin 10 mg and 20 mg in Primary Dysbetalipoproteinemia (Type III hyperlipoproteinemia) After Six Weeks by Median Percent Change (95% CI) from Baseline (N=32)

	Median at Baseline (mg/dL)	Median percent change from baseline (95% CI) Rosuvastatin 10 mg	Median percent change from baseline (95% CI) Rosuvastatin 20 mg
Total-C	342.5	-43.3 (-46.9, -37.5)	-47.6 (-51.6, -42.8)
Triglycerides	503.5	-40.1 (-44.9, -33.6)	-43.0 (-52.5, -33.1)
NonHDL-C	294.5	-48.2 (-56.7, -45.6)	-56.4 (-61.4, -48.5)
VLDL-C + IDL-C	209.5	-46.8 (-53.7, -39.4)	-56.2 (-67.7, -43.7)
LDL-C	112.5	-54.4 (-59.1, -47.3)	-57.3 (-59.4, -52.1)
HDL-C	35.5	10.2 (1.9, 12.3)	11.2 (8.3, 20.5)
RLP-C	82.0	-56.4 (-67.1, -49.0)	-64.9 (-74.0, -56.6)
Apo-E	16.0	-42.9 (-46.3, -33.3)	-42.5 (-47.1, -35.6)

14.5 Homozygous Familial Hypercholesterolemia

Dose-Titration Study: In an open-label, forced-titration study, homozygous FH patients (n=40, 8 to 63 years) were evaluated for their response to rosuvastatin 20 to 40 mg titrated at a 6-week interval. In the overall population, the mean LDL-C reduction from baseline was 22%. About one-third of the patients benefited from increasing their dose from 20 mg to 40 mg with further LDL lowering of greater than 6%. In the 27 patients with at least a 15% reduction in LDL-C, the mean LDL-C reduction was 30% (median 28% reduction). Among 13 patients with an LDL-C reduction of $< 15\%$, 3 had no change or an increase in LDL-C. Reductions in LDL-C of 15% or greater were observed in 3 of 5 patients with known receptor negative status.

Pediatric use information for patients 7 to 17 years of age is approved for AstraZeneca's CRESTOR (rosuvastatin calcium) tablets. However, due to AstraZeneca's marketing exclusivity rights, this drug product is not labeled with that pediatric information.

16 HOW SUPPLIED/STORAGE AND HANDLING

Rosuvastatin Calcium Tablets, 5 mg are pink, oval shaped, biconvex film-coated tablets debossed with '1' on one side and '29' on the other side.

Bottles of 30 NDC 57237-168-30
Bottles of 90 NDC 57237-168-90
Bottles of 1,000 NDC 57237-168-99

Rosuvastatin Calcium Tablets, 10 mg are pink, round, biconvex film-coated tablets debossed with '1' on one side and '30' on the other side.

Bottles of 30 NDC 57237-169-30
Bottles of 90 NDC 57237-169-90
Bottles of 1,000 NDC 57237-169-99

Rosuvastatin Calcium Tablets, 20 mg are pink, round, biconvex film-coated tablets debossed with '1' on one side and '31' on the other side.

Bottles of 30 NDC 57237-170-30
Bottles of 90 NDC 57237-170-90
Bottles of 1,000 NDC 57237-170-99

Rosuvastatin Calcium Tablets, 40 mg are pink, oval shaped, biconvex film-coated tablets debossed with '1' on one side and '32' on the other side.

Bottles of 30 NDC 57237-171-30
Bottles of 90 NDC 57237-171-90
Bottles of 1,000 NDC 57237-171-99

Storage

Store at 20° to 25°C (68° to 77°F); excursions permitted to 15° to 30°C (59° to 86°F) [see USP Controlled Room Temperature]. Protect from moisture.

17 PATIENT COUNSELING INFORMATION

Advise the patient to read the FDA-approved patient labeling (Patient Information).

Patients should be instructed not to take 2 doses of rosuvastatin within 12 hours of each other.

Skeletal Muscle Effects

Patients should be advised to report promptly unexplained muscle pain, tenderness, or weakness, particularly if accompanied by malaise or fever or if these muscle signs or symptoms persist after discontinuing rosuvastatin.

Concomitant Use of Antacids

When taking rosuvastatin with an aluminum and magnesium hydroxide combination antacid, the antacid should be taken at least 2 hours after rosuvastatin administration.

Embryofetal Toxicity

Advise females of reproductive potential of the risk to a fetus, to use effective contraception during treatment, and to inform their healthcare provider of a known or suspected pregnancy. [see *Contraindications (4)* and *Use in Specific Populations (8.1, 8.3)*].

Lactation

Advise women not to breastfeed during treatment with rosuvastatin [see *Contraindications (4)* and *Use in Specific Populations (8.2)*].

Liver Enzymes

It is recommended that liver enzyme tests be performed before the initiation of rosuvastatin and if signs or symptoms of liver injury occur. All patients treated with rosuvastatin should be advised to promptly report any symptoms that may indicate liver injury, including fatigue, anorexia, right upper abdominal discomfort, dark urine or jaundice.

CRESTOR is a trademark of the AstraZeneca group of companies.

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PATIENT INFORMATION

Rosuvastatin Calcium Tablets (ros-SOO-va-STAT-in KAL-see-um)

Read this Patient Information carefully before you start taking rosuvastatin calcium tablets and each time you get a refill. If you have any questions about rosuvastatin calcium tablets, ask your doctor. Only your doctor can determine if rosuvastatin calcium tablets are right for you.

What are rosuvastatin calcium tablets?

Rosuvastatin calcium tablets are a prescription medicine that contains a cholesterol-lowering medicine called rosuvastatin calcium. Most of the cholesterol in your blood is made in the liver. Rosuvastatin calcium tablets work by reducing cholesterol in two ways: rosuvastatin calcium tablets block an enzyme in the liver causing the liver to make less cholesterol, and rosuvastatin calcium tablets increase the uptake and breakdown by the liver of cholesterol already in the blood.