

**AUSTRALIAN PRODUCT INFORMATION**  
**EZALO COMPOSITE PACK**  
**(ezetimibe, rosuvastatin as calcium)**  
**Tablets**

**1 NAME OF THE MEDICINE**

Ezetimibe

Rosuvastatin, as calcium

**2 QUALITATIVE AND QUANTITATIVE COMPOSITION**

**EZETROL®**

Each tablet of EZETROL for oral administration contains 10 mg ezetimibe.

List of excipients with known effect:

- lactose (as monohydrate)

**OGN ROSUVASTATIN**

OGN ROSUVASTATIN tablets contain 5 mg, 10 mg, 20 mg or 40 mg rosuvastatin (as calcium).

List of excipients with known effect:

- sugars (as lactose)

For the full list of excipients, see **Section 6.1 List of Excipients**.

**3 PHARMACEUTICAL FORM**

	<b>EZETROL</b>	<b>OGN ROSUVASTATIN</b>
EZALO COMPOSITE PACK 10 mg + 5 mg	ezetimibe 10 mg  white to off-white capsule shaped tablets, debossed with "414" on one side	rosuvastatin (as calcium) 5 mg Brown, round, film coated tablets.
EZALO COMPOSITE PACK 10 mg + 10 mg		rosuvastatin (as calcium) 10 mg Brown, round, film coated tablets with "RSV 10" debossed on one side.
EZALO COMPOSITE PACK 10 mg + 20 mg		rosuvastatin (as calcium) 20 mg Brown, round, film coated tablets with "RSV 20" debossed on one side.
EZALO COMPOSITE PACK 10 mg + 40 mg		rosuvastatin (as calcium) 40 mg Brown, round, film coated tablets with "RSV 40" debossed on one side.

**4 CLINICAL PARTICULARS**

**4.1 THERAPEUTIC INDICATIONS**

**Primary Hypercholesterolaemia**

EZALO COMPOSITE PACK is indicated as adjunctive therapy to diet in patients with primary (heterozygous familial and non-familial) hypercholesterolaemia where use of a combination product is appropriate in those patients:

- not appropriately controlled with rosuvastatin or ezetimibe alone; or

- already treated with rosuvastatin and ezetimibe

### **Homozygous Familial Hypercholesterolaemia (HoFH)**

EZALO COMPOSITE PACK is indicated for patients with HoFH. Patients may also receive adjunctive treatments (e.g., LDL apheresis).

## **4.2 DOSE AND METHOD OF ADMINISTRATION**

This combination product is not indicated for first-line use.

The patient should be on an appropriate lipid-lowering diet and should continue on this diet during treatment with EZALO COMPOSITE PACK.

EZALO COMPOSITE PACK can be administered within the dosage range of 10 mg+5 mg to 10 mg+40 mg as a single daily dose. The recommended starting dose is 10 mg+5 mg or 10 mg+10 mg once per day.

The dosage regimen of EZALO COMPOSITE PACK is one EZETROL tablet and one OGN ROSUVASTATIN tablet to be taken, at the same time, once daily.

EZALO COMPOSITE PACK can be administered at any time of the day, with or without food. Each tablet should be taken with water at the same time daily and is not to be chewed or crushed.

Therapy should be individualised according to the target lipid levels, the recommended goal of therapy, and the patient's response. The dose should also take into account the potential risk for adverse reactions (see **Section 4.8 Adverse Effects (Undesirable Effects)**).

A dose adjustment can be made after 4 weeks of therapy where necessary. The usual maximum dose is 10 mg+20 mg once per day.

A dose of 10 mg+40 mg once per day should only be considered in patients who are still at high cardiovascular risk after their response to a dose of 10 mg+20 mg once per day is assessed. This may particularly apply to patients with familial hypercholesterolaemia. It is recommended that the 10 mg+40 mg dose is used only in patients in whom regular follow-up is planned. A dose of 10 mg+40 mg must not be exceeded in any patient.

Specialist supervision should be considered when the dose of EZALO COMPOSITE PACK is titrated to 10 mg+40 mg.

### **Use in the elderly**

No dosage adjustment is required for elderly patients (see **Section 5.2 Pharmacokinetic Properties, Characteristics in patients (special populations)**).

### **Use in paediatric patients**

Not recommended for use in children.

### **Hepatic Insufficiency**

There may be increased exposure to rosuvastatin in patients receiving the combination. The lowest effective dose should be used and regular monitoring for adverse effects should be performed. No dosage adjustment is required in patients with mild hepatic insufficiency (Child Pugh score 5 to 6). Treatment is not recommended in patients with moderate (Child Pugh score 7 to 9) or severe (Child Pugh score > 9) liver dysfunction. (See **Section 4.3 Contraindications, Section 4.4 Special Warnings and Precautions for Use and Section 5.2 Pharmacokinetic Properties, Characteristics in patients (special populations)**).

### **Renal insufficiency**

There may be increased exposure to rosuvastatin in patients receiving this combination. The lowest effective dose should be used and regular monitoring for adverse effects should be performed. No dosage adjustment is required for patients with mild to moderate renal impairment. For patients with severe renal impairment ( $CL_{cr} < 30$  mL/min/1.73m<sup>2</sup>) not on dialysis the dose of EZALO COMPOSITE PACK should be started at 10 mg + 5 mg once daily and not exceed 10 mg+10 mg once daily (see **Section 4.4 Special Warnings and Precautions for Use**).

The reporting rate for serious renal events in post-marketing use of rosuvastatin alone is higher at the 40 mg dose. An assessment of renal function is therefore recommended during routine follow-up of patients treated with EZALO COMPOSITE PACK at a dose of 10 mg+40 mg.

### **Dosage in Asian patients**

Initiation of therapy with EZALO COMPOSITE PACK 10 mg+5 mg once daily should be considered for Asian patients. The potential for increased systemic exposures relative to Caucasians is relevant when considering escalation of dose in cases where hypercholesterolaemia is not adequately controlled at doses of 10 mg+5 mg, 10 mg+10 mg or 10+20 mg once daily (see **Section 4.4 Special Warnings and Precautions for Use and Section 5.2 Pharmacokinetic Properties**).

### **Genetic polymorphisms**

Genotypes of SLCO1B1 (OATP1B1) c.521CC and ABCG2 (BCRP) c.421AA have been shown to be associated with an increase in rosuvastatin exposure (AUC) compared to SLCO1B1 c.521TT and ABCG2 c.421CC. For patients who are known to have such specific types of polymorphisms, a lower daily dose of rosuvastatin is recommended (see **Section 5.2 Pharmacokinetic Properties**).

### **Dosage in patients taking other drugs**

#### *Ciclosporin*

In patients taking ciclosporin, EZALO COMPOSITE PACK dosage should be limited to 10 mg+5 mg once daily (see **Section 4.5 Interactions with Other Medicines and Other Forms of Interactions**).

#### *Gemfibrozil*

Increased systemic exposure to rosuvastatin has been observed in subjects taking concomitant rosuvastatin and gemfibrozil (see **Section 4.5 Interactions with Other Medicines and Other Forms of Interactions**). If EZALO COMPOSITE PACK is used in combination with gemfibrozil, the dose of EZALO COMPOSITE PACK should be limited to 10 mg+10 mg once daily.

#### *Atazanir and ritonavir, lopinavir and ritonavir or simeprevir*

Initiate EZALO COMPOSITE PACK therapy with 10 mg+5 mg once daily. The dose of EZALO COMPOSITE PACK should not exceed 10 mg+10 mg once daily (see **Section 4.4 Special Warnings and Precautions for Use and Section 4.5 Interactions with Other Medicines and Other Forms of Interactions**).

#### *Elbasvir or grazoprevir*

The dose of EZALO COMPOSITE PACK should not exceed 10 mg+10 mg once daily (see **Section 4.4 Special Warnings and Precautions for Use and Section 4.5 Interactions with Other Medicines and Other Forms of Interactions**).

### 4.3 CONTRAINDICATIONS

EZALO COMPOSITE PACK is contraindicated in patients:

- with known hypersensitivity to any component of this medication
- with myopathy secondary to other lipid lowering agents
- during pregnancy, in nursing mothers and in women of childbearing potential, unless they are taking adequate contraceptive precautions (see **Section 4.4 Special Warnings and Precautions for Use**)
- with active liver disease including unexplained persistent elevations in serum transaminases and any serum transaminase elevation exceeding 3 x the upper limit of normal (ULN) (see **Section 4.4 Special Warnings and Precautions for Use**)
- in combination with fenofibrate in patients with gall bladder disease
- on fusidic acid therapy (see **Section 4.4 Special Warnings and Precautions for Use** and **Section 4.5 Interactions with Other Medicines and Other Forms of Interactions**).

Due to the rosuvastatin 40 mg component, EZALO 10 mg + 40 mg is contraindicated in patients with predisposing factors for myopathy/rhabdomyolysis. Such factors include:

- hypothyroidism
- personal or family history of hereditary muscular disorders
- previous history of muscular toxicity with another HMG-CoA reductase inhibitor or fibrate
- alcohol abuse
- situations where an increase in rosuvastatin plasma levels may occur (see **Section 4.5 Interactions with Other Medicines and Other Forms of Interactions** and **Section 5.2 Pharmacokinetic Properties**)
- severe renal impairment (CrCl < 30 mL/min)
- Asian patients
- concomitant use of fibrates.

### 4.4 SPECIAL WARNINGS AND PRECAUTIONS FOR USE

#### Treatment with the 10 mg + 40 mg dose

There is limited long term safety data of EZALO COMPOSITE PACK. Due to the potential increase in rosuvastatin exposure when combined with ezetimibe, risk factors such as hepatic or renal impairment that may increase rosuvastatin exposure and the potential for increased adverse effects at the highest dose (10 mg + 40 mg) (e.g. muscle effects, renal impairment and elevated liver enzymes), monitoring of patients on the highest dose of EZALO COMPOSITE PACK is recommended (see **Section 5.2 Pharmacokinetic Properties**).

#### Liver enzymes

HMG-CoA reductase inhibitors, like some other lipid-lowering therapies, have been associated with biochemical abnormalities of liver function. The incidence of persistent elevations (>3 times the upper limit of normal [ULN] occurring on 2 or more consecutive occasions) in serum transaminases in fixed dose studies was 0.4, 0, 0, and 0.1% in patients who received rosuvastatin 5, 10, 20, and 40 mg, respectively. 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.

**Liver function tests should be performed before initiation of treatment and periodically thereafter. Patients who develop increased transaminase levels should be monitored**

until the abnormalities have resolved. Should an increase in ALT or AST of > 3 times ULN persist, reduction of dose or withdrawal of EZALO COMPOSITE PACK is recommended.

EZALO COMPOSITE PACK should be used with caution in patients who consume substantial quantities of alcohol and/or have a history of liver disease (see **Section 4.2 Dose and Method of Administration** and **Section 5.2 Pharmacokinetic Properties, Characteristics in patients (special populations)**). Active liver disease or unexplained persistent transaminase elevations are contraindications to the use of EZALO COMPOSITE PACK (see **Section 4.3 Contraindications**).

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.

In controlled co-administration trials in patients receiving ezetimibe with a statin, consecutive transaminase elevations ( $\geq 3 \times$  the upper limit of normal [ULN]) have been observed.

### **Skeletal muscle**

#### Rosuvastatin

**Rare cases of rhabdomyolysis with acute renal failure secondary to myoglobinuria have been reported with rosuvastatin and with other drugs in this class.**

Uncomplicated myalgia has been reported in rosuvastatin treated patients (see **Section 4.8 Adverse Effects (Undesirable Effects)**). Creatine kinase (CK) elevations (> 10 times upper limit of normal) occurred in 0.2% to 0.4% of patients taking rosuvastatin at doses up to 40 mg in clinical studies. Treatment-related myopathy, defined as muscle aches or muscle weakness in conjunction with increases in CK values > 10 times upper limit of normal, was reported in up to 0.1% of patients taking rosuvastatin doses of up to 40 mg in clinical studies. In clinical trials, the incidence of myopathy and rhabdomyolysis increased at doses of rosuvastatin above the recommended dosage range (5 to 40 mg). In postmarketing experience, effects on skeletal muscle, e.g. uncomplicated myalgia, myopathy and, rarely, rhabdomyolysis have been reported in patients treated with HMG-CoA reductase inhibitors including rosuvastatin. As with other HMG-CoA reductase inhibitors, reports of rhabdomyolysis with rosuvastatin are rare, but higher at the highest marketed dose (40 mg). Factors that may predispose patients to myopathy with HMG-CoA reductase inhibitors include advanced age ( $\geq 65$  years), hypothyroidism, and renal insufficiency. The incidence of myopathy increased at doses of rosuvastatin above the recommended dosage range.

Consequently:

1. EZALO COMPOSITE PACK should be prescribed with caution in patients with predisposing factors for myopathy, such as renal impairment, advanced age and hypothyroidism.
2. Patients should be advised to promptly report unexplained muscle pain, tenderness, or weakness, particularly if accompanied by malaise or fever. EZALO COMPOSITE PACK therapy should be discontinued if markedly elevated CK levels occur or myopathy is diagnosed or suspected.
3. Rosuvastatin 40 mg is reserved only for those patients who are not adequately controlled at the 20 mg dose, considering their level of LDL-C and overall CV risk profile. Similarly, EZALO COMPOSITE PACK 10 mg + 40 mg should be reserved for such patients.
4. The risk of myopathy during treatment with rosuvastatin may be increased with concurrent administration of other lipid-lowering therapies, ciclosporin, or HIV/HCV antiviral agents, such as atazanavir/ritonavir, lopinavir/ritonavir, simeprevir, or products containing elbasvir/grazoprevir (see **Section 4.2 Dose and Method of**

**Administration and Section 4.5 Interactions with Other Medicines and Other Forms of Interactions**). Cases of myopathy, including rhabdomyolysis, have been reported with HMG-CoA reductase inhibitors, including rosuvastatin, co-administered with colchicine, and caution should be exercised when prescribing EZALO COMPOSITE PACK with colchicine (see **Section 4.5 Interactions with Other Medicines and Other Forms of Interactions**). The benefit of further alterations in lipid levels by the combined use of EZALO COMPOSITE PACK with fibrates or niacin should be carefully weighed against the potential risks of this combination. Combination therapy with EZALO COMPOSITE PACK and gemfibrozil should generally be avoided. The combination of EZALO COMPOSITE PACK and other fibrates (except fenofibrate) is not recommended (see **Section 4.2 Dose and Method of Administration, Section 4.3 Contraindications and Section 4.5 Interactions with Other Medicines and Other Forms of Interactions**).

5. The risk of myopathy during treatment with EZALO COMPOSITE PACK may be increased in circumstances that increase rosuvastatin drug levels (see **Section 4.4 Special Warnings and Precautions for Use, Use in renal impairment and Section 5.2 Pharmacokinetic Properties, Characteristics in patients (special populations)**).
6. EZALO COMPOSITE PACK therapy should also be temporarily withheld or discontinued 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, major surgery, trauma, severe metabolic, endocrine and electrolyte disorders, or uncontrolled seizures).

There have been very rare reports of an immune-mediated necrotising myopathy clinically characterised by persistent proximal muscle weakness and elevated serum creatine kinase during treatment or following discontinuation of statins, including rosuvastatin. Additional neuromuscular and serologic testing may be necessary. Treatment with immunosuppressive agents may be required.

In rosuvastatin trials there was no evidence of increased skeletal muscle effects when rosuvastatin was dosed with any concomitant therapy. However, an increase in the incidence of myositis and myopathy has been seen in patients receiving other HMG-CoA reductase inhibitors together with ciclosporin, nicotinic acid, azole antifungals, macrolide antibiotics and fibric acid derivatives including gemfibrozil (see **Section 4.2 Dose and Method of Administration, Section 4.5 Interactions with Other Medicines and Other Forms of Interactions and Section 4.8 Adverse Effects (Undesirable Effects)**).

Fusidic acid must not be co-administered with statins. There have been reports of rhabdomyolysis (including some fatalities) in patients receiving this combination (see **Section 4.3 Contraindications, Section 4.5 Interactions with Other Medicines and Other Forms of Interactions and Section 4.8 Adverse Effects (Undesirable Effects)**). In patients where the use of systemic fusidic acid is considered essential, EZALO COMPOSITE PACK treatment should be discontinued throughout the duration of fusidic acid treatment. The patient should be advised to seek medical advice immediately if they experience any symptoms of muscle weakness, pain or tenderness. EZALO COMPOSITE PACK therapy may be re-introduced seven days after the last dose of fusidic acid.

Reports of myopathy and/or rhabdomyolysis have been observed with HMG-CoA reductase inhibitors coadministered with daptomycin. Caution should be used when prescribing HMG-CoA reductase inhibitors with daptomycin, as either agent can cause myopathy and/or rhabdomyolysis when given alone. Consideration should be given to suspending EZALO COMPOSITE PACK temporarily in patients taking daptomycin (**Section 4.5 Interactions with Other Medicines and Other Forms of Interactions**).

### Ezetimibe

In clinical trials, there was no excess of myopathy or rhabdomyolysis associated with ezetimibe compared with the relevant control arm (placebo or statin alone). However, myopathy and rhabdomyolysis are known adverse reactions to statins and other lipid-lowering drugs. In clinical trials, the incidence of CPK > 10 X ULN was 4 of 1674 (0.2%) patients administered ezetimibe alone vs 1 of 786 (0.1%) patients administered placebo, and for 1 of 917 (0.1%) patients co-administered ezetimibe and a statin vs 4 of 929 (0.4%) patients administered a statin alone.

In post-marketing experience with ezetimibe, cases of myopathy and rhabdomyolysis have been reported regardless of causality. Most patients who developed rhabdomyolysis were taking a statin prior to initiating ezetimibe. However, rhabdomyolysis has been reported very rarely with ezetimibe monotherapy and very rarely with the addition of ezetimibe to agents known to be associated with increased risk of rhabdomyolysis.

### **Myasthenia Gravis/Ocular Myasthenia**

In few cases, statins have been reported to induce new onset or aggravate pre-existing myasthenia gravis or ocular myasthenia (see Section 4.8 SIDE EFFECTS (UNDESIRABLE EFFECTS)). EZALO COMPOSITE PACK should be discontinued in case of these conditions occur. There have been reports of recurrences of these conditions when the same or a different statin was (re-) administered.

### **Renal effects**

#### Rosuvastatin

The reporting rate for serious renal events in post-marketing use is higher at the 40 mg dose. An assessment of renal function should be considered during routine follow-up of patients treated with a dose of 40 mg.

### **Endocrine effects**

#### Rosuvastatin

Increases in HbA1c and fasting serum glucose levels have been reported with rosuvastatin. Although clinical studies have shown that rosuvastatin alone does not reduce basal plasma cortisol concentration or impair adrenal reserve, caution should be exercised if EZALO COMPOSITE PACK is administered concomitantly with drugs that may decrease the levels or activity of endogenous steroid hormones such as ketoconazole, spironolactone, and cimetidine.

### **Caution in prevention of cardiovascular events**

#### Rosuvastatin

The long term safety and efficacy of rosuvastatin treatment in patients commencing treatment with LDL-C < 3.4 mmol/L who have been assessed to be at risk of cardiovascular events have not been established. There is also uncertainty associated with the safety of long term intensive reduction of LDL-C to very low levels. Data are currently available for up to 2 years for the 20 mg dose only. The risk benefit balance for longer term use of rosuvastatin in this population has therefore not been established. The benefits of longer term treatment should be weighed against safety and tolerability risks (see **Section 4.8 Adverse Effects (Undesirable Effects)**). Clinically significant benefit in using rosuvastatin in patients without clinically evident cardiovascular disease and who are assessed as having a low risk of cardiovascular events (men ≥50 and women ≥60 years of age with hsCRP>2 mg/L, but no other cardiovascular disease risk factor) has not been established.

### **Diabetes mellitus**

#### Rosuvastatin

Increases in HbA1c and serum glucose levels have been observed in patients treated with rosuvastatin, including increases that exceeded the threshold for the diagnosis of diabetes mellitus in some cases (see **Section 4.8 Adverse Effects (Undesirable Effects)**).

### **Interstitial lung disease**

Exceptional cases of interstitial lung disease have been reported with some statins, especially with long term therapy. Presenting features can include dyspnoea, non-productive cough and deterioration in general health (fatigue, weight loss and fever). If it is suspected a patient has developed interstitial lung disease, EZALO COMPOSITE PACK should be discontinued.

### **Race**

#### Rosuvastatin

The result of a large pharmacokinetic study conducted in the US demonstrated an approximate 2-fold elevation in median exposure in Asian subjects (having either Filipino, Chinese, Japanese, Korean, Vietnamese or Asian-Indian origin) compared with a Caucasian control group. This increase should be considered when making EZALO COMPOSITE PACK dosing decisions for Asian patients (see **Section 4.2 Dose and Method of Administration and Section 5.2 Pharmacokinetic Properties**).

### **Age and sex**

#### Rosuvastatin

There was no clinically relevant effect of age or sex on the pharmacokinetics of rosuvastatin.

### **Fibrates**

The co-administration of ezetimibe with fibrates, other than fenofibrate, has not been studied. Therefore, co-administration of EZALO COMPOSITE PACK and fibrates (other than fenofibrate) is not recommended (see **Section 4.3 Contraindications and Section 4.5 Interactions with Other Medicines and Other Forms of Interactions**).

### **Fenofibrate**

Fibrates may increase cholesterol excretion from the bile, and ezetimibe increased cholesterol in the gallbladder bile in a preclinical study in dogs. Given the potential for cholelithiasis, and the numerically higher incidence of cholecystectomies in patients administered ezetimibe and fenofibrate in a clinical study (see **Section 4.8 Adverse Effects (Undesirable Effects) and Section 5.1 Pharmacodynamic Properties, Clinical trials**), co-administration of EZALO COMPOSITE PACK and fenofibrate is not recommended in patients with pre-existing gallbladder disease (see **Section 4.3 Contraindications**).

### **Ciclosporin**

Caution should be exercised when initiating EZALO COMPOSITE PACK in the setting of ciclosporin. Ciclosporin concentrations should be monitored in patients receiving EZALO COMPOSITE PACK and ciclosporin (see **Section 4.5 Interactions with Other Medicines and Other Forms of Interactions**).

### **Anticoagulants**

If EZALO COMPOSITE PACK is added to warfarin, another coumarin anticoagulant or fluindione, the International Normalised Ratio (INR) should be appropriately monitored (see **Section 4.5 Interactions with Other Medicines and Other Forms of Interactions**).

### **Use in hepatic impairment**

#### Ezetimibe

Due to unknown effects of the increased exposure of ezetimibe in patients with moderate to severe hepatic insufficiency, EZALO COMPOSITE PACK is not recommended in these



patients (see **Section 5.2 Pharmacokinetic Properties, Characteristics in patients (special populations)**).

#### Rosuvastatin

Pharmacokinetic evaluation in subjects with varying degrees of hepatic impairment determined that there was no evidence of increased exposure to rosuvastatin other than in 2 subjects with the most severe liver disease (Child-Pugh scores of 8 and 9). In these subjects systemic exposure was increased by at least 2-fold compared to subjects with lower Child-Pugh scores (see **Section 4.2 Dose and Method of Administration**).

#### **Use in renal impairment**

##### Rosuvastatin

Pharmacokinetic evaluation in subjects with varying degrees of renal impairment, determined that mild to moderate renal disease had little influence on plasma concentrations of rosuvastatin. However, subjects with severe impairment (CrCl < 30 mL/min) had a 3-fold increase in plasma concentration compared to healthy volunteers (see **Section 4.2 Dose and Method of Administration**).

#### **Use in the elderly**

No dosage adjustment is required for elderly patients. Because there is no specific data in the elderly with this combination and advanced age ( $\geq 65$  years) is a predisposing factor for myopathy, EZALO COMPOSITE PACK should be prescribed with caution in the elderly (see **Section 5.2 Pharmacokinetic Properties, Characteristics in patients (special populations)**).

#### **Paediatric use**

Not recommended for use in children.

#### **Effects on laboratory tests**

See **Section 4.8 Adverse Effects (Undesirable Effects)**.

### **4.5 INTERACTIONS WITH OTHER MEDICINES AND OTHER FORMS OF INTERACTIONS**

Co-administration of ezetimibe with rosuvastatin resulted in a 19% increase in the AUC of rosuvastatin. This small increase is not considered clinically significant (see **Section 4.4 Special Warnings and Precautions for Use**).

Multiple mechanisms may contribute to potential interactions with HMG Co-A reductase inhibitors. Drugs or herbal products that inhibit certain enzymes and/or transporter (e.g. OATP1B) pathways may increase rosuvastatin plasma concentrations and may lead to an increased risk of myopathy/rhabdomyolysis.

**Consult the prescribing information of all concomitantly used drugs to obtain further information about their potential interactions with rosuvastatin and/or the potential for enzyme or transporter alterations and possible adjustments to dose and regimens.**

#### **Antacids**

##### Ezetimibe

Concomitant antacid administration decreased the rate of absorption of ezetimibe but had no effect on the bioavailability of ezetimibe. This decreased rate of absorption is not considered clinically significant.

##### Rosuvastatin

Simultaneous administration of rosuvastatin and an antacid suspension containing aluminium and magnesium hydroxide resulted in a decrease in rosuvastatin plasma concentration of approximately 50%. This effect was mitigated when the antacid was dosed 2 hours after rosuvastatin. The clinical relevance of this interaction has not been studied.

### **Colestyramine**

Concomitant colestyramine administration decreased the mean AUC of total ezetimibe (ezetimibe + ezetimibe glucuronide) approximately 55%. The incremental LDL-C reduction due to adding ezetimibe to colestyramine may be lessened by this interaction.

Therefore, dosing of EZALO COMPOSITE PACK and a bile acid binding sequestrant should take place several hours apart. However, efficacy and safety of such combination have not been studied.

### **Ciclosporin**

#### Ezetimibe

The effect of ciclosporin on ezetimibe was studied in eight post-renal transplant patients with creatinine clearance of > 50 mL/min who were on a stable dose of ciclosporin. A single 10 mg dose of ezetimibe resulted in a 3.4-fold (range 2.3- to 7.9-fold) increase in the mean AUC for total ezetimibe compared to a group of historical healthy volunteers (n=17) who had taken a single 10-mg dose of ezetimibe alone.

In a different study, a renal transplant patient with severe renal insufficiency (creatinine clearance of 13.2 mL/min/1.73 m<sup>2</sup>) who was receiving multiple medications, including ciclosporin, demonstrated a 12-fold greater exposure to total ezetimibe compared to concurrent controls.

In a two-period crossover study in twelve healthy subjects, daily administration of 20 mg ezetimibe for 8 days with a single dose 100 mg dose of ciclosporin on Day 7 resulted in a mean 15% increase in ciclosporin AUC (range 10% decrease to 51% increase) compared to a single 100 mg dose of ciclosporin alone (see **Section 4.4 Special Warnings and Precautions for Use**). Ciclosporin concentrations should be monitored in patients receiving ezetimibe and ciclosporin.

#### Rosuvastatin

Co-administration of rosuvastatin with ciclosporin resulted in no significant changes in ciclosporin plasma concentration. However, rosuvastatin steady state AUC<sub>(0-t)</sub> increased up to 7-fold over that seen in healthy volunteers administered the same dose. These increases are considered to be clinically significant and require special consideration in the dosing of EZALO COMPOSITE PACK (see **Section 4.2 Dose and Method of Administration**).

### **Fenofibrate**

#### Ezetimibe

In a pharmacokinetic study, concomitant fenofibrate administration increased total ezetimibe concentrations approximately 1.5-fold (see **Section 4.3 Contraindications** and **Section 4.4 Special Warnings and Precautions for Use**).

#### Rosuvastatin

Co-administration of fenofibrate with rosuvastatin resulted in no significant changes in plasma concentrations of rosuvastatin or fenofibrate (see **Section 4.3 Contraindications** and **Table 1**). However, a pharmacodynamic interaction may occur. Fenofibrate may increase the risk of myopathy when given concomitantly with HMG-CoA reductase inhibitors (see **Section 4.4 Special Warnings and Precautions for Use**).

### **Gemfibrozil**

#### Ezetimibe

In a pharmacokinetic study, concomitant gemfibrozil administration increased total ezetimibe concentrations approximately 1.7-fold. This increase is not considered clinically significant. No clinical data are available.

#### Rosuvastatin

Concomitant use of rosuvastatin and gemfibrozil resulted in a 2-fold increase in rosuvastatin  $C_{max}$  and AUC (see **Table 1**). Gemfibrozil may increase the risk of myopathy when given concomitantly with HMG-CoA reductase inhibitors.

#### **Fibric Acid Derivatives**

Other fibric acids, including nicotinic acid, may increase the risk of myopathy when given concomitantly with HMG-CoA reductase inhibitors (see **Section 4.4 Special Warnings and Precautions for Use**).

#### **Anticoagulants**

##### Ezetimibe

Concurrent administration of ezetimibe (10 mg once daily) had no significant effect on bioavailability and prothrombin time in a study of twelve healthy adult males administered a single dose of warfarin. There have been post-marketing reports of increased International Normalised Ratio in patients who had ezetimibe added to warfarin or fluindione. Most of these patients were also on other medications (see **Section 4.4 Special Warnings and Precautions for Use**).

##### Rosuvastatin

Co-administration of rosuvastatin to patients on stable warfarin therapy resulted in clinically significant rises in INR (> 4, baseline 2-3). In patients taking vitamin K antagonists and rosuvastatin concomitantly, INR should be determined before starting EZALO COMPOSITE PACK and frequently enough during early therapy to ensure that no significant alteration of INR occurs. Once a stable INR has been documented, INR can be monitored at the intervals usually recommended for patients on vitamin K antagonists. If the dose of EZALO COMPOSITE PACK is changed, the same procedure should be repeated. Rosuvastatin therapy has not been associated with bleeding or with changes in INR in patients not taking anticoagulants.

#### **Cytochrome P450 enzymes and/or transporter interactions**

##### Ezetimibe

In preclinical studies, it has been shown that ezetimibe does not induce cytochrome P450 drug metabolising enzymes. No clinically significant pharmacokinetic interactions have been observed between ezetimibe and drugs known to be metabolised by cytochromes P450 1A2, 2D6, 2C8, 2C9, and 3A4, or N-acetyltransferase.

##### Rosuvastatin

*In vitro* and *in vivo* data indicate that 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 polyprotein 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. ciclosporin, certain HIV protease/HCV antiviral agents) may result in increased rosuvastatin plasma concentrations and an increased risk of myopathy. It is recommended that prescribers consult the relevant product information when considering administration of such products together with rosuvastatin. (see **Table 1, Section 4.2 Dose and Method of Administration** and **Section 4.4 Special Warnings and Precautions for Use**).

**Table 1 Effect of co-administered medicinal products on rosuvastatin exposure (AUC in order of decreasing magnitude) from published clinical trials**

Interacting drug dose regimen	Rosuvastatin dose regimen	Change in rosuvastatin AUC*	Change in rosuvastatin C <sub>max</sub>
Ciclosporin 75 mg BID to 200 mg BID, 6 months	10 mg OD, 10 days	7.1-fold ↑	10.6-fold ↑
Atazanavir 300 mg/ritonavir 100 mg OD, 8 days	10 mg, single dose	3.1-fold ↑	7.0-fold ↑
Simeprevir 150 mg OD, 7 days	10 mg, single dose	2.8-fold ↑	3.2-fold ↑
Lopinavir 400 mg/ritonavir 100 mg BID, 17 days	20 mg OD, 7 days	2.1-fold ↑	4.7-fold ↑
Clopidogrel 300 mg loading, followed by 75 mg at 24 hours	20 mg, single dose	2-fold ↑	2.2-fold ↑
Gemfibrozil 600 mg BID, 7 days	80 mg, single dose	1.9-fold ↑	2.2-fold ↑
Eltrombopag 75 mg OD, 5 days	10 mg, single dose	1.6-fold ↑	2.0-fold ↑
Darunavir 600 mg/ritonavir 100 mg BID, 7 days	10 mg OD, 7 days	1.5-fold ↑	2.4-fold ↑
Tipranavir 500 mg/ritonavir 200 mg BID, 11 days	10 mg, single dose	1.4-fold ↑	2.2-fold ↑
Dronedarone 400 mg BID	10 mg	1.4-fold ↑	
Itraconazole 200 mg OD, 5 days	10 mg, single dose	**1.4-fold ↑	**1.4-fold ↑
Ezetimibe 10 mg OD, 14 days	10 mg, OD, 14 days	1.2-fold ↑	1.2-fold ↑
Fosamprenavir 700 mg/ritonavir 100 mg BID, 8 days	10 mg, single dose	8% ↑	45% ↑
Aleglitazar 0.3 mg, 7 days	40 mg, 7 days	↔	10% ↑

Interacting drug dose regimen	Rosuvastatin dose regimen	Change in rosuvastatin AUC*	Change in rosuvastatin C <sub>max</sub>
Silymarin 140 mg TID, 5 days	10 mg, single dose	6% ↓	7% ↓
Fenofibrate 67 mg TID, 7 days	10 mg, 7 days	7% ↑	21% ↑
Rifampacin 450 mg OD, 7 days	20 mg, single dose	4 % ↓	12% ↑
Ketoconazole 200 mg BID, 7 days	80 mg, single dose	↔	5% ↓
Fluconazole 200 mg OD, 11 days	80 mg, single dose	14% ↑	9% ↑
Erythromycin 500 mg QID, 7 days	80 mg, single dose	20% ↓	31% ↓
Baicalin 50 mg TID, 14 days	20 mg, single dose	47% ↓	

\*Data given as x-fold change represent a simple ratio between co-administration and rosuvastatin alone.

Data given as % change represent % difference relative to rosuvastatin alone. Increase is indicated as “↑”, no change as “↔”, decrease as “↓”.

\*\*Several interaction studies have been performed at different rosuvastatin dosages, the table shows the most significant ratio

OD = once daily; BID = twice daily; TID = three times daily; QID = four times daily

### Oral contraceptives

Co-administration of oral contraceptives (ethinyl estradiol and norgestrel) with rosuvastatin resulted in an increase in plasma concentrations of ethinyl estradiol and norgestrel by 26% and 34%, respectively. This increase is not considered clinically significant.

### Other medications

#### Ezetimibe

Ezetimibe had no effect on the pharmacokinetics of dapsone, dextromethorphan, digoxin, oral contraceptives (ethinyl estradiol and levonorgestrel), glipizide, tolbutamide or midazolam during co-administration. Cimetidine, co-administered with ezetimibe, had no effect on the bioavailability of ezetimibe.

#### Rosuvastatin

In clinical studies, rosuvastatin was co-administered with anti-hypertensive agents and anti-diabetic agents. These studies did not produce any evidence of clinically significant adverse interactions.

### Digoxin

Co-administration of digoxin with rosuvastatin resulted in no change to digoxin plasma concentrations.

### **Protease inhibitors**

Increased systemic exposure to rosuvastatin has been observed in subjects receiving rosuvastatin with various protease inhibitors in combination with ritonavir. Consideration should be given both to the benefit of lipid lowering by the use of EZALO COMPOSITE PACK in HIV patients receiving protease inhibitors and the potential for increased rosuvastatin plasma concentrations when initiating and up-titrating EZALO COMPOSITE PACK doses in patients treated with protease inhibitors (see **Table 1, Section 4.2 Dose and Method of Administration** and **Section 4.4 Special Warnings and Precautions for Use**).

### **Inhibitors of Breast Cancer Resistance Protein (BCRP)**

Concomitant administration of products that are inhibitors of BCRP (e.g., elbasvir and grazoprevir) may lead to increased plasma concentrations of rosuvastatin and an increased risk of myopathy. In a pharmacokinetic study, concomitant administration of elbasvir (50 mg) and grazoprevir (200 mg) caused a 2.3-fold and 5.5-fold increase in rosuvastatin exposure ( $AUC_{0-\infty}$  and  $C_{max}$ , respectively). Therefore, the dose of EZALO COMPOSITE PACK should not exceed 10 mg+10 mg once daily in patients receiving concomitant medication with products containing elbasvir or grazoprevir (see **Section 4.2 Dose and Method of Administration** and **Section 4.4 Special Warnings and Precautions for Use**).

### **Fusidic acid**

The risk of myopathy including rhabdomyolysis may be increased by the concomitant administration of systemic fusidic acid with statins. Co-administration of this combination may cause increased plasma concentrations of both agents. The mechanism of this interaction (whether it is pharmacodynamics or pharmacokinetic, or both) is yet unknown. There have been reports of rhabdomyolysis (including some fatalities) in patients receiving this combination. EZALO COMPOSITE PACK treatment should be discontinued throughout the duration of the fusidic acid treatment (see **Section 4.3 Contraindications, Section 4.4 Special Warnings and Precautions for Use** and **Section 4.8 Adverse Effects (Undesirable Effects)**).

### **Colchicine**

Cases of myopathy, including rhabdomyolysis, have been reported with HMG-CoA reductase inhibitors, including rosuvastatin, co-administered with colchicine, and caution should be exercised when prescribing EZALO COMPOSITE PACK with colchicine (see **Section 4.4 Special Warnings and Precautions for Use**).

### **Daptomycin**

The risk of myopathy and/or rhabdomyolysis may be increased by concomitant administration of HMG-CoA reductase inhibitors and daptomycin (see **Section 4.4 Special Warnings and Precautions for Use**).

### **Ticagrelor**

#### Rosuvastatin

Ticagrelor can cause renal insufficiency and may affect renal excretion of rosuvastatin, increasing the risk for rosuvastatin accumulation. In some cases, co-administered ticagrelor and rosuvastatin led to renal function decrease, increased creatine kinase level and rhabdomyolysis. Renal function and creatine kinase control is recommended while using ticagrelor and rosuvastatin concomitantly.

## **4.6 FERTILITY, PREGNANCY AND LACTATION**

### **Effects on fertility**

#### EZALO COMPOSITE PACK

No studies on the effect on fertility have been conducted with ezetimibe and rosuvastatin in combination.

#### Ezetimibe

Ezetimibe had no effects on fertility in male and female rats at doses up to 1000 mg/kg/day by oral gavage, corresponding to exposures of approximately 1 and 7 times the adult human exposure for ezetimibe and total ezetimibe respectively.

#### Rosuvastatin

In 1 of 3 monkeys treated with rosuvastatin PO at 30 mg/kg/day for 6 months degenerative changes in the testicular epithelium were seen. The no-effect dose of 10 mg/kg/day was associated with rosuvastatin plasma concentrations (AUC) similar to those expected in humans taking 40 mg rosuvastatin daily. Rosuvastatin had no effect on male or female fertility when administered to rats at PO doses of 50 mg/kg/day (systemic rosuvastatin concentrations (AUC) 4.8-6.6 times those expected in humans). The main human metabolite of rosuvastatin, N-desmethyl rosuvastatin, has not been assessed for activity in rat fertility studies.

#### **Use in pregnancy [Category D]**

Category D is defined as drugs which have caused, are suspected to have caused or may be expected to cause, an increased incidence of human foetal malformations or irreversible damage. These drugs may also have adverse pharmacological effects.

#### EZALO COMPOSITE PACK

No studies on the effect on embryofetal development have been conducted with ezetimibe and rosuvastatin in combination.

EZALO COMPOSITE PACK is contraindicated in Pregnancy. Atherosclerosis is a chronic process and discontinuation of lipid-lowering drugs during pregnancy should have little impact on the outcome of long-term therapy of primary hypercholesterolaemia. Cholesterol and other products of cholesterol biosynthesis are essential components for foetal development (including synthesis of steroids and cell membranes).

Because HMG-CoA reductase inhibitors decrease cholesterol synthesis and possibly the synthesis of other biologically active substances derived from cholesterol, EZALO may cause fetal harm when administered to pregnant women. EZALO should be discontinued as soon as pregnancy is recognized [see **4.3 Contraindications**]. Advise females of reproductive potential to use effective contraception during treatment with EZALO.

#### Ezetimibe

No clinical data on exposed pregnancies are available. Ezetimibe crossed the placenta in rats and rabbits. There was no evidence of foetal abnormalities in rats dosed with up to 1000 mg/kg/day of ezetimibe by oral gavage during organogenesis, corresponding to exposures of about 1 and 7 times the adult human exposure for ezetimibe and total ezetimibe respectively, based on AUC. There was an increase in the incidence of extra thoracic ribs in rabbits at doses of 250 to 1000 mg/kg/day, corresponding to exposures of 0.5 to 1 times and 100 to 150 times the adult human exposure for ezetimibe and total ezetimibe, respectively. The relevance of this finding to humans is not known. Ezetimibe should be used in pregnancy only if the potential benefit exceeds the potential risk.

Ezetimibe in combination with statins in rats and rabbits resulted in higher exposures to ezetimibe and/or statins than either drug administered alone. Skeletal malfunctions (hemivertebrae in rats and shortened/filamentous tail associated with fused and reduced number of caudal vertebrae in rabbits) and other less severe foetal abnormalities were observed in rats and rabbits dosed with ezetimibe/statin combinations during organogenesis. HMG-CoA reductase inhibitors (statins) are contraindicated during pregnancy, therefore,

ezetimibe in combination with statins should not be used in pregnancy (see **Section 4.3 Contraindications**).

Embryofetal studies in rats showed no adverse foetal effects of oral ezetimibe/fenofibrate doses corresponding to 5 times (total ezetimibe) and 38 times (fenofibric acid) the anticipated human plasma exposure at the maximum recommended doses. In similar studies in rabbits, a No Effect Level for embryotoxicity was established at ca. 90 times (total ezetimibe) and 32 times (fenofibric acid) anticipated human exposure levels.

#### Rosuvastatin

Cholesterol and other products of cholesterol biosynthesis are essential components for foetal development, including synthesis of steroids and cell membranes. Since HMG-CoA reductase inhibitors decrease cholesterol synthesis, rosuvastatin is contraindicated during pregnancy. The risk of foetal injury outweighs the benefits of HMG-CoA reductase inhibitor therapy during pregnancy.

In two series of 178 and 143 cases where pregnant women took a HMG-CoA reductase inhibitor (statin) during the first trimester of pregnancy serious foetal abnormalities occurred in several cases. These included limb and neurological defects, spontaneous abortions and foetal deaths. The exact risk of injury to the foetus occurring after a pregnant woman is exposed to a HMG-CoA reductase inhibitor has not been determined. The current data do not indicate that the risk of foetal injury in women exposed to HMG-CoA reductase inhibitors is high. If a pregnant woman is exposed to a HMG-CoA reductase inhibitor she should be informed of the possibility of foetal injury and discuss the implications with her pregnancy specialist.

#### **Use in lactation**

##### EZALO COMPOSITE PACK

EZALO COMPOSITE PACK is contraindicated in nursing mothers. Because of the potential for serious adverse reactions in a breastfed infant, women who are nursing should not take EZALO COMPOSITE PACK.

No studies in lactating animals have been conducted with the combination of ezetimibe and rosuvastatin.

#### Ezetimibe

Studies in rats have shown that ezetimibe is excreted in milk. It is not known whether ezetimibe is excreted into human breast milk.

Ezetimibe had no effects on pup development in rats treated with up to 1000 mg/kg/day of ezetimibe during late pregnancy and lactation. Drug exposures (based on AUC) in pups were approximately 1.5% and 50% of maternal exposures for ezetimibe and total ezetimibe respectively. Ezetimibe should not be used in nursing mothers unless the potential benefit justifies the potential risk to the infant.

#### Rosuvastatin

The safety of rosuvastatin while breast-feeding has not been established. It is not known if rosuvastatin is excreted into human milk, but a study in rats treated with rosuvastatin showed that unchanged drug and metabolites are excreted in milk at concentrations up to 3 times greater than those in maternal plasma. Therefore, rosuvastatin is contraindicated in breastfeeding women. The results of animal and *in vitro* studies of rosuvastatin are summarised in **Section 5.3 Preclinical Safety Data**.

## **4.7 EFFECTS ON ABILITY TO DRIVE AND USE MACHINES**

### Ezetimibe



No studies of the effects on the ability to drive and use of machines have been performed. However, certain side effects that have been reported with ezetimibe may affect some patients' ability to drive or operate machinery. Individual responses to ezetimibe may vary (see **Section 4.8 Adverse Effects (Undesirable Effects)**).

#### Rosuvastatin

Pharmacological testing revealed no evidence of a sedative effect of rosuvastatin. From the safety profile, rosuvastatin is not expected to adversely affect the ability to drive or operate machinery.

### **4.8 ADVERSE EFFECTS (UNDESIRABLE EFFECTS)**

#### Coadministration of ezetimibe and rosuvastatin

##### *Ezetimibe Add-on to On-going Rosuvastatin Therapy*

Co-administration of ezetimibe and rosuvastatin has been evaluated for safety in more than 2,409 patients in sponsor-initiated clinical trials and other clinical data from published literature. For full details of adverse effects, please refer to the Product Information for the individual products of ezetimibe and rosuvastatin.

In a 6 week-active comparator study (P139V1), 440 subjects taking rosuvastatin (5 mg or 10 mg) were randomized to either rosuvastatin (10 mg or 20 mg) or ezetimibe 10 mg added to rosuvastatin (5 or 10 mg) therapy, equivalent to EZALO COMPOSITE PACK 10 mg + 5 mg or 10 mg + 10 mg. The co-administration was generally well tolerated (see table below).

The study discontinuation rate due to adverse experiences was 2.3% (n = 5) for the ezetimibe 10 mg + rosuvastatin 5 or 10 mg treatment arm and 0.5% (n = 1) for the rosuvastatin 10 mg or 20 mg arm.

Drug-related Adverse Events in any Treatment Group

	<b>Ezetimibe 10 mg + Rosuvastatin 5 or 10 mg (n = 221)</b>	<b>Rosuvastatin 10 mg or 20mg (n = 219)</b>
<b>Gastrointestinal disorders</b>		
Abdominal distension	0.45%	0.0%
Abdominal pain	0.45%	0.0%
Constipation	0.90%	0.91%
Dry mouth	0.45%	0.0%
Nausea	0.45%	0.0%
<b>General disorders and administration site conditions</b>		
Asthenia	0.0%	0.46%
Fatigue	0.0%	0.46%
<b>Musculoskeletal and connective tissue disorders</b>		
Arthralgia	0.45%	0.0%
Myalgia	0.90%	0.46%
<b>Skin and subcutaneous tissue disorders</b>		
Allergic dermatitis	0.45%	0.0%
Eczema	0.45%	0.0%
Skin exfoliation	0.0%	0.46%

In this study, the incidence of clinically important elevations in serum transaminases (ALT  $\geq$  3 X ULN, consecutive) was 0.5% (n =1) for patients treated with ezetimibe + rosuvastatin and 0% for patients in the rosuvastatin only treatment group. No patients in either group had clinically significant elevations in AST. Clinically important elevations in creatine kinase (CK  $\geq$ 10 X ULN) were seen in 0.5% (n =1) of patients in the rosuvastatin only treatment group and not seen in patients treated with ezetimibe + rosuvastatin.

In another 6 week randomised active-comparator study (EXPLORER<sup>1</sup>) in 469 subjects with hypercholesterolemia and a history of CHD or clinical evidence of atherosclerosis or a CHD risk equivalent (10-year CHD risk score > 20%), the incidence of increased ALT at the 10 mg + 40 mg dose was 2.5% (n=6) for ezetimibe + rosuvastatin and 0.4% (n=1) for rosuvastatin alone.

### Ezetimibe

Clinical studies of 8 to 14 weeks duration in which ezetimibe 10 mg daily was administered alone, with a statin, or with fenofibrate in 3551 patients demonstrated: ezetimibe was generally well tolerated, adverse reactions were usually mild and transient, the overall incidence of side effects reported with ezetimibe was similar to that reported with placebo, and the discontinuation rate due to adverse experiences was comparable between ezetimibe and placebo.

There were no drug-related adverse experiences reported occurring in  $\geq$  2% of patients taking ezetimibe alone (n = 1691).

The following drug-related adverse experiences were reported occurring in  $\geq$  2% in patients taking ezetimibe co-administered with a statin (n = 1675).

	All Statins (%) N=1676	ezetimibe 10 mg co-administered with a statin (%) N=1675
<b>Musculoskeletal and connective tissue disorders</b>		
Myalgia	2.4	3.2

In addition, the following common or uncommon drug-related adverse experiences were reported in clinical trials in patients taking ezetimibe co-administered with a statin and at a greater incidence than statin administered alone, or in patients taking ezetimibe alone and at a greater incidence than placebo.

### **Ezetimibe co-administered with a statin:**

Investigations: Common- ALT and/or AST increased  
 Nervous System Disorders: Common- headache  
 Gastrointestinal Disorders: Uncommon- dry mouth; gastritis  
 Skin and Subcutaneous Tissue Disorders: Uncommon- pruritus  
 Musculoskeletal and Connective Tissue Disorders: Common- myalgia. Uncommon- back pain; muscular weakness; pain in extremity  
 General Disorders and Administration Site Condition: Uncommon- asthenia; oedema peripheral

### **Ezetimibe administered alone:**

Investigations: Uncommon- gamma-glutamyltransferase increased; liver function test abnormal  
 Respiratory, Thoracic and Mediastinal Disorders: Uncommon- cough

Gastrointestinal Disorders: Common- abdominal pain; diarrhoea; flatulence. Uncommon- dyspepsia; gastroesophageal reflux disease

Musculoskeletal and Connective Tissue Disorders: Uncommon- muscle spasms; neck pain

Metabolism and Nutrition Disorders: Uncommon- decreased appetite

Vascular Disorders: Uncommon- hot flush; hypertension

General Disorders and Administration Site Condition: Common- fatigue. Uncommon- chest pain; pain

#### **Ezetimibe coadministered with fenofibrate:**

Gastrointestinal Disorders: Common- abdominal pain

In a co-administration study with fenofibrate (see **Section 5.1 Pharmacodynamic Properties, Clinical trials**), in which 292 patients were exposed for  $\geq 24$  weeks and 120 exposed for  $\geq 52$  weeks, the incidence rate of cholecystectomy in the co-administration group was 1.7% (95% CI 0.6, 4.0) per 100 patient years compared to 0 (95% CI 0, 9.2) per 100 PY for the ezetimibe group and 0.6% (95% CI 0, 3.1) per 100 PY for the fenofibrate group. Longer term safety outcomes have not been studied.

#### **Laboratory values**

In controlled clinical monotherapy trials, the incidence of clinically important elevations in serum transaminases (ALT and/or AST  $\geq 3 \times$  ULN, consecutive) was similar between ezetimibe (0.5 %) and placebo (0.3 %). In co-administration trials, the incidence was 1.3% for patients treated with ezetimibe co-administered with a statin and 0.4% for patients treated with a statin alone. These elevations were generally asymptomatic, not associated with cholestasis, and returned to baseline after discontinuation of therapy or with continued treatment (see **Section 4.4 Special Warnings and Precautions for Use**).

Clinically important elevations of CPK ( $\geq 10 \times$  ULN) in patients treated with ezetimibe administered alone or co-administered with a statin were similar to elevations seen with placebo or statin administered alone, respectively.

#### **Post-marketing experience**

The following adverse reactions have been reported in post-marketing experience, regardless of causality assessment:

Hypersensitivity reactions, including anaphylaxis, angioedema, rash and urticaria; severe cutaneous adverse reactions (SCARs), including Stevens-Johnson syndrome (SJS) and toxic epidermal necrolysis (TEN), drug reaction with eosinophilic and systemic symptoms (DRESS) and erythema multiforme; arthralgia; myalgia; increased CPK; elevations of liver transaminases; hepatitis; thrombocytopenia; pancreatitis; nausea; dizziness; paraesthesia; depression; cholelithiasis; cholecystitis; drug-induced liver injury; constipation; asthenia and, very rarely myopathy/rhabdomyolysis (see **Section 4.4 Special Warnings and Precautions for Use**).

#### Rosuvastatin

Rosuvastatin is generally well tolerated. The adverse events seen with rosuvastatin are generally mild and transient. In controlled clinical trials less than 4% of rosuvastatin treated patients were withdrawn due to adverse events. This withdrawal rate was comparable to that reported in patients receiving placebo.

Adverse reactions within each body system are listed in descending order of frequency (Very common:  $\geq 10\%$ ; common:  $\geq 1\%$  and  $< 10\%$ ; uncommon:  $\geq 0.1\%$  and  $< 1\%$ ; rare  $\geq 0.01\%$  and  $< 0.1\%$ ; very rare:  $< 0.01\%$ ). These include the following:

**Central nervous system:** Common: dizziness

**Gastrointestinal:** Common: constipation, nausea, abdominal pain

<b>Musculoskeletal:</b>	Rare: pancreatitis Common: myalgia, asthenia
<b>Skin:</b>	Rare: myopathy (including myositis) and rhabdomyolysis Uncommon: pruritus, rash, urticaria
<b>Endocrine:</b>	Rare: hypersensitivity reactions including angioedema Common: diabetes mellitus
<b>Miscellaneous:</b>	Common: headache

As with other HMG-CoA reductase inhibitors, the incidence of adverse drug reactions tends to increase with increasing dose.

#### ***Skeletal muscle effects***

Rare cases of rhabdomyolysis, which were occasionally associated with impairment of renal function, have been reported with rosuvastatin.

Rhabdomyolysis may be fatal. Examples of signs and symptoms of rhabdomyolysis are muscle weakness, muscle swelling, muscle pain, dark urine, myoglobinuria, elevated serum creatine kinase, acute renal failure, cardiac arrhythmia (see **Section 4.3 Contraindications, Section 4.4 Special Warnings and Precautions for Use** and **Section 4.5 Interactions with Other Medicines and Other Forms of Interactions**).

#### ***Laboratory effects***

As with other HMG-CoA reductase inhibitors, a dose-related increase in liver transaminases, CK, glucose, glutamyl transpeptidase, alkaline phosphatase and bilirubin and thyroid function abnormalities have been observed in a small number of patients taking rosuvastatin. Increases in HbA1c have also been observed in patients treated with rosuvastatin. Proteinuria and microscopic haematuria has been detected by dipstick testing in the clinical trial program in a small number of patients taking rosuvastatin and other HMG-CoA reductase inhibitors at their recommended doses. The proteinuria was mostly tubular in origin and was more frequent in patients on rosuvastatin 40 mg. It was generally transient and not associated with worsening renal function. Although the clinical significance is unknown, dose reduction should be considered in patients on rosuvastatin 40 mg with unexplained persistent proteinuria and/or haematuria.

#### ***Other effects***

In a long-term controlled clinical trial rosuvastatin was shown to have no harmful effects on the ocular lens (see **Section 4.4 Special Warnings and Precautions for Use**). In rosuvastatin-treated patients, there was no impairment of adrenocortical function.

#### **Post-marketing experience**

In addition to the above, the following adverse events have been reported during post-marketing experience for rosuvastatin:

#### ***Musculoskeletal disorders***

Very rare: arthralgia  
Frequency unknown: immune-mediated necrotising myopathy

As with other HMG-CoA reductase inhibitors, the reporting rate for rhabdomyolysis in post-marketing use is higher at the highest marketed dose.

#### ***Haematological disorders***

Frequency unknown: thrombocytopenia

#### ***Hepatobiliary disorders***

Rare: increased hepatic transaminases  
Very rare: jaundice, hepatitis  
Frequency unknown: hepatic failure

### ***Nervous system disorder***

Very rare: memory loss  
Frequency unknown: peripheral neuropathy

### ***Psychiatric disorders***

Frequency unknown: depression, sleep disorders (including insomnia and nightmares)

### ***Reproductive system and breast disorders***

Frequency unknown: gynaecomastia

In addition, myasthenia gravis or ocular myasthenia associated with statin use has been reported (see **Section 4.4 SPECIAL WARNINGS AND PRECAUTIONS FOR USE, Myasthenia Gravis/Ocular Myasthenia**),

### **Reporting suspected adverse effects**

Reporting suspected adverse reactions after registration 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 at [www.tga.gov.au/reporting-problems](http://www.tga.gov.au/reporting-problems).

## **4.9 OVERDOSE**

For information on the management of overdose, contact the Poisons Information Centre on 131126 (Australia).

No specific treatment of overdosage with EZALO COMPOSITE PACK can be recommended. In the event of an overdose, symptomatic and supportive measures should be employed. In symptomatic patients, monitor serum creatinine, BUN, creatinine phosphokinase and urine myoglobin for indications of renal impairment secondary to rhabdomyolysis. Liver function tests should be performed in symptomatic patients.

### Ezetimibe

In clinical studies, administration of ezetimibe, 50 mg/day to 15 healthy subjects for up to 14 days, or 40 mg/day to 18 patients with primary hypercholesterolemia for up to 56 days, was generally well tolerated.

A few cases of overdosage with ezetimibe have been reported; most have not been associated with adverse experiences. Reported adverse experiences have not been serious. In the event of an overdose, symptomatic and supportive measures should be employed.

### Rosuvastatin

There is no specific treatment for overdose. In case of overdose treatment should be supportive and symptomatic. Haemodialysis is unlikely to be of benefit.

## **5 PHARMACOLOGICAL PROPERTIES**

### **5.1 PHARMACODYNAMIC PROPERTIES**

#### **Mechanism of action**

#### Ezetimibe

Ezetimibe is in a class of lipid-modifying compounds that inhibit the intestinal absorption of cholesterol and related plant sterols.

Ezetimibe has a mechanism of action that differs from other classes of cholesterol reducing compounds (e.g. statins, bile acid sequestrants [resins], fibric acid derivatives, and plant sterols).

The molecular target of ezetimibe is the sterol transporter, Niemann-Pick C1-Like 1 (NPC1L1), which is responsible for the intestinal uptake of cholesterol and phytosterols. Ezetimibe therefore inhibits the absorption of cholesterol, leading to a decrease in the delivery of intestinal cholesterol to the liver. This causes a reduction of hepatic cholesterol stores and an increase in clearance of cholesterol from the blood. Ezetimibe does not increase bile acid excretion (like bile acid sequestrants) and does not inhibit cholesterol synthesis in the liver (like statins).

In a 2-week clinical study in 18 hypercholesterolaemic patients, ezetimibe inhibited intestinal cholesterol absorption by 54 %, compared with placebo. By inhibiting the absorption of intestinal cholesterol, ezetimibe reduces the delivery of cholesterol to the liver. Statins reduce cholesterol synthesis in the liver. Together these distinct mechanisms provide complementary cholesterol reduction. Ezetimibe, administered with a statin, reduces total-C, LDL-C, Apo B, and TG and increases HDL-C in patients with hypercholesterolaemia, beyond either treatment alone.

Clinical studies demonstrate that elevated levels of total C, LDL-C and Apo B, the major protein constituent of LDL, promote human atherosclerosis. In addition, decreased levels of HDL-C are associated with the development of atherosclerosis. Epidemiologic studies have established that cardiovascular morbidity and mortality vary directly with the level of total-C and LDL-C and inversely with the level of HDL-C. Like LDL, cholesterol-enriched triglyceride-rich lipoproteins, including very-low-density lipoproteins (VLDL), intermediate-density lipoproteins (IDL), and remnants, can also promote atherosclerosis.

A series of preclinical studies was performed to determine the selectivity of ezetimibe for inhibiting cholesterol absorption. Ezetimibe inhibited the absorption of [<sup>14</sup>C]-cholesterol with no effect on the absorption of triglycerides, fatty acids, bile acids, progesterone, ethinyl estradiol, or the fat soluble vitamins A and D.

### Rosuvastatin

Rosuvastatin is a fully synthetic competitive inhibitor of HMG-CoA reductase, the rate-limiting enzyme that converts 3-hydroxy-3-methylglutaryl coenzyme A to mevalonate, a precursor of cholesterol. Triglycerides (TG) and cholesterol in the liver are incorporated, with apolipoprotein B (ApoB), into very low density lipoprotein (VLDL) and released into the plasma for delivery to peripheral tissues. VLDL particles are TG-rich. Cholesterol-rich low density lipoprotein (LDL) is formed from VLDL and is cleared primarily through the high affinity LDL receptor in the liver. Rosuvastatin produces its lipid-modifying effects in two ways; it increases the number of hepatic LDL receptors on the cell-surface, enhancing uptake and catabolism of LDL and it inhibits the hepatic synthesis of VLDL, thereby reducing the total number of VLDL and LDL particles.

High density lipoprotein (HDL), which contains ApoA-I, is involved, amongst other functions, in transport of cholesterol from tissues back to the liver (reverse cholesterol transport).

The involvement of LDL-C in atherogenesis has been well documented. Epidemiological studies have established that high LDL-C and TG, and low HDL-C and ApoA-I have been linked to a higher risk of cardiovascular disease. Intervention studies have shown the benefits on mortality and CV event rates of lowering LDL-C and TG or raising HDL-C. More recent data has linked the beneficial effects of HMG-CoA reductase inhibitors to the lowering of non-HDL-C (i.e. all circulating cholesterol not in HDL) and ApoB or reducing the ApoB/ApoA-I ratio.

### **Clinical Efficacy**

A therapeutic response (reduction in LDL-C) to rosuvastatin is evident within 1 week of commencing therapy and 90% of maximum response is usually achieved in 2 weeks. The maximum response is usually achieved by 4 weeks and is maintained after that.

## Clinical trials

All of the evidence for the efficacy of the combination of ezetimibe and rosuvastatin comes from short-term studies with surrogate endpoint. There have been no long-term studies with clinical outcome endpoints for this combination. The studies described include sponsor-initiated clinical trials and other placebo or comparator-controlled clinical trials from published literature.

### Ezetimibe

Controlled clinical studies of varying designs were conducted with ezetimibe co-administered with a statin. Ezetimibe significantly reduced total cholesterol (total-C), low-density lipoprotein cholesterol (LDL-C), apolipoprotein B (ApoB) and triglycerides (TG) and increased high-density lipoprotein cholesterol (HDL-C) in patients with hypercholesterolaemia.

## Primary hypercholesterolemia

### *Coadministration of ezetimibe and rosuvastatin*

#### *Ezetimibe initiated concurrently with rosuvastatin*

In a multicentre, randomised, open-label, parallel group study (EXPLORER<sup>1</sup>) in 469 subjects with hypercholesterolemia and a history of CHD or clinical evidence of atherosclerosis or a CHD risk equivalent (10-year CHD risk score > 20%) with fasting LDL-C levels between  $\geq 4.1$  mmol/L and < 6.5 mmol/L and fasting triglyceride (TG) concentration of < 4.52 mmol/L, subjects were randomly assigned either rosuvastatin 40 mg (n=230) or rosuvastatin 40 mg and ezetimibe 10 mg (n=239) for 6 weeks.

Treatment groups were similar at baseline in terms of demographic and clinical variables. In the rosuvastatin 40 mg group, the mean age of subjects was 63.5 years, 56% were male and 92% were Caucasian. 64% had metabolic syndrome and the mean baseline LDL-C was 4.95 mmol/L. In the rosuvastatin 40 mg + ezetimibe 10 mg group, the mean age of subjects was 63.1 years, 59% were male and 93% were Caucasian. 59% had metabolic syndrome and the mean baseline LDL-C was 4.90 mmol/L.

The primary end point was the percentage of patients achieving the ATP III LDL cholesterol goal (2.59 mmol/L) after 6 weeks of treatment. Significantly more patients who were treated with rosuvastatin 40 mg + ezetimibe 10 mg achieved the ATP III LDL cholesterol goal (< 2.6 mmol/L) at week 6 compared to those on rosuvastatin 40 mg alone (94.0% vs 79.1%,  $p < 0.001$ ).

Secondary efficacy end points included percent change from baseline in LDL cholesterol, HDL cholesterol, TC, TG, non-HDL cholesterol, and other lipid parameters at Week 6. After 6 weeks, LDL cholesterol decreased to 1.47 and 2.11 mmol/L in the combination and monotherapy groups, respectively. Significantly greater percent decreases in LDL cholesterol levels were achieved with combination therapy than monotherapy (mean percent decrease - 69.8% vs -57.1%,  $p < 0.001$ ). Significantly ( $p < 0.001$ ) greater decreases in TC, non-HDL cholesterol, and TGs were also observed at week 6 in the combination therapy group compared with the monotherapy group. Both treatments increased HDL cholesterol to a similar extent at week 6.

The percent of patients who discontinued treatment as a result of any adverse event was 2.5% for the combination therapy group and 1.3% for the monotherapy group.

#### *Ezetimibe added to stable rosuvastatin therapy*

In a multicentre, open-label, randomised, parallel-group 12 week study<sup>2</sup>, 833 patients (458 male and 375 female, mean age 62 years) with hypercholesterolaemia and Coronary Heart Disease (CHD) or a CHD risk equivalent, atherosclerosis or a 10-year CHD Risk of >20% were

randomised after a 6-week dietary lead-in period to rosuvastatin 10 mg, rosuvastatin 20 mg, simvastatin 40 mg or simvastatin 80 mg for 6 weeks. Ezetimibe 10 mg was then added to each regimen for a further 6 weeks.

The primary end point was percent change from baseline in LDL-C after 6 weeks combination therapy (Week 12). Ezetimibe added to rosuvastatin 10 mg and 20 mg lowered baseline LDL-C by 59.7% and 63.5% respectively, compared with 55.2% and 57.4% when added to simvastatin 40 mg and simvastatin 80 mg.

Secondary end points included percent change in other lipid parameters after 6 weeks combination treatment. Ezetimibe 10 mg+rosuvastatin 20 mg produced greater improvements in other lipid parameters than ezetimibe 10 mg+simvastatin 40 mg/80 mg. Ezetimibe 10 mg+rosuvastatin 10 mg significantly reduced LDL-C, TG, non-HDL-C, and Apo-B compared with Ezetimibe 10 mg + simvastatin 40 mg (see Table 2).

Eighty-one patients did not complete the study; 31 withdrawals were due to adverse events.

**Table 2:** GRAVITY study – Percent change in lipid parameters and percent of patients achieving LDL-C goals at Week 12

	Study Group	R10mg+E10mg (N=210)	R20mg+E10mg (N=204)	S40mg+E10mg (N=199)	S80mg+E10mg (N=201)
	Baseline LDL-C (mg/dL; mean±SD)	162.7±22.7	164.8±24.7	164.8±23.6	163.1±24.1
Mean % change from baseline	LDL-C	-59.7*	-63.5† §	-55.2	-57.4
	HDL-C	6.4	7.5* ‡	3.9	4.3
	TG	-28.9*	-35.0† §	-23.0	-25.8
	Non-HDL-C	-54.7†	-58.9† §	-49.9	-52.4
	Apo-B	-46.1*	-49.5† §	-42.0	-44.2
% of patients achieving LDL-C goals	<100 mg/dL (<2.59 mmol/L)	93.3*	95.6† ‡	87.4	88.6
	<70 mg/dL (<1.81 mmol/L)	67.1	77.0† §	55.3	67.7
		*p<0.05 vs S40mg+E10mg †p<0.001 vs S40mg+E10mg	†p<0.001 vs S40mg+E10mg; ‡p<0.05 vs S80mg+E10mg; §p<0.001 vs S80mg+E10mg		

*Ezetimibe add-on to on-going rosuvastatin therapy (titration studies)*

In a multicentre, randomised, double-blind, 6 week-active comparator study (P139V1), 440 subjects (272 male and 168 female) at moderately high/high risk of coronary heart disease with LDL cholesterol levels failing to reach their NCEP ATPIII goal (< 2.6 mmol/L or <1.8 mmol/L depending on baseline characteristics) were stratified to treatment with rosuvastatin 5 mg or 10 mg for 4-5 weeks. Patients were then randomised to either doubling of their rosuvastatin dose (10 mg or 20 mg) or to add ezetimibe 10 mg to their rosuvastatin (5 or 10 mg) therapy.



Patients were 32 to 79 years of age with a mean baseline LDL-C of 2.69 mmol/L in the rosuvastatin (5 or 10 mg) + ezetimibe 10 mg group and 2.60 mmol/L in the rosuvastatin (10 or 20 mg) group. The majority of patients were white (76.8%) and the majority (67.5%) were high risk for CHD with atherosclerotic vascular disease (AVD). Overall, the mean duration of hypercholesterolemia was 9.2 years.

The primary endpoint was percent change from baseline in LDL-C at week 6 based on full analysis set population (all randomised patients excluding those who failed to receive at least one dose of study treatment or had lack of baseline data). The addition of ezetimibe 10 mg to rosuvastatin (5 mg or 10 mg) achieved significantly greater LDL-C reductions compared to doubling the initial dose of rosuvastatin (10 mg or 20 mg) ( $p < 0.001$ ). The LS mean percent change in LDL-C from baseline to the study end was -20.96% when ezetimibe 10 mg was added to rosuvastatin and -5.71% when the original rosuvastatin dose was doubled (data pooled across the rosuvastatin 5 mg and 10 mg strata). The LS mean treatment difference was -15.25% with a 95% CI (-19.89, -10.60) (see Table 3).

**Table 3: Study P139V1 - Analysis of Percent Change from Baseline in LDL-Cholesterol (mg/dL) at Study Endpoint After 6 Weeks of Treatment**

Treatment	N	Baseline (mg/dl) Mean $\pm$ SD	Endpoint (mg/dl) Mean $\pm$ SD	LS mean (95% CI)	Difference in LS Mean (95% CI)	P value
<b>Overall</b>						
ezetimibe 10mg + rosuvastatin (5 or 10mg)	219	103.90 $\pm$ 25.39	80.73 $\pm$ 32.28	-20.96 (-24.28, -17.64)	-15.25 (-19.89, -10.60)	< 0.001
Rosuvastatin (10 or 20mg)	217	100.20 $\pm$ 24.44	92.88 $\pm$ 26.52	-5.71 (-9.05, -2.38)		
<b>Stratum I</b>						
ezetimibe 10mg + rosuvastatin 5 mg	98	106.74 $\pm$ 23.54	85.89 $\pm$ 31.37	-17.92 (-22.69, -13.15)	-12.31 (-18.95, -5.67)	<0.001
Rosuvastatin 10 mg	96	102.42 $\pm$ 23.41	95.36 $\pm$ 23.27	-5.61 (-10.43, -0.79)		
<b>Stratum II</b>						
ezetimibe 10mg + rosuvastatin 10mg	121	101.60 $\pm$ 26.67	76.79 $\pm$ 32.59	-23.74 (-28.34, -19.14)	-17.46 (-23.92, -10.99)	<0.001
Rosuvastatin 20mg	121	98.44 $\pm$ 25.18	90.90 $\pm$ 28.78	-6.28 (-10.88, -1.69)		

The secondary endpoints were percent change from baseline in other lipid and lipoprotein parameters and percent change from baseline in LDL-C at Week 6. Ezetimibe 10 mg added to on-going rosuvastatin therapy (5 or 10 mg) significantly lowered total-cholesterol, non-HDL-C and Apo B, compared with doubling of the rosuvastatin dose ( $p < 0.001$ ) and resulted in a significantly greater proportion of patients reaching their LDL-C goal compared with doubling the baseline dose of rosuvastatin (10 mg or 20 mg) (59.4% vs. 30.9%, adjusted odds ratio = 4.5 with a 95% CI of (2.9, 6.9);  $p < 0.001$ ). LDL-C treatment goals were  $< 1.8$  mmol/L for patients at high risk for CHD with AVD and  $< 2.6$  mmol/L for patients at moderately high risk and high risk for CHD without AVD).

Twelve patients discontinued the study early, 6 due to adverse experiences. Treatment groups were similar in the proportion of patients with clinical adverse experiences, serious adverse experiences, drug-related adverse experiences or adverse experiences leading to discontinuation.

#### *Long-term studies*

There is limited clinical data on the long term effects of ezetimibe and rosuvastatin co-administration, especially at the 10 mg + 40 mg dose.

There are no clinical outcome data on cardiovascular morbidity and mortality with EZALO COMPOSITE PACK. No incremental benefit of EZALO COMPOSITE PACK on cardiovascular morbidity and mortality over and above that demonstrated for rosuvastatin has been established.

#### **Other studies**

The use of ezetimibe with fenofibrate in patients with mixed hyperlipidaemia demonstrated a numerically higher incidence of cholecystectomies in patients in the co-administration group compared with those in the monotherapy groups (see **Section 4.3 Contraindications** and **Section 4.8 Adverse Effects (Undesirable Effects)**). Each drug contributed to lowering LDL-C, but the effects on triglycerides and HDL-C were related to fenofibrate and were not enhanced by co-administration. Longer term clinical outcomes such as mortality and morbidity were not investigated.

## **5.2 PHARMACOKINETIC PROPERTIES**

In a pilot four period parallel design study of healthy hypercholesterolemic patients, primarily designed to evaluate the short term LDL lowering effects of ezetimibe 10 mg, rosuvastatin 10 mg, ezetimibe 10 mg plus rosuvastatin 10 mg, and placebo, the pharmacokinetics of the compounds were also evaluated. The pharmacokinetic results from this study indicate that co-administration of ezetimibe 10 mg and rosuvastatin 10 mg would not result in the pharmacokinetics of either drug being significantly altered during co-administration compared to monotherapy.

This small, parallel groups study showed that there was no effect on the AUC or  $C_{max}$  of ezetimibe, total ezetimibe (ezetimibe + conjugated ezetimibe) or rosuvastatin when ezetimibe 10 mg was co-administered with rosuvastatin 10 mg compared with ezetimibe 10 mg alone or rosuvastatin 10 mg alone. The mean AUC for ezetimibe and total ezetimibe were similar between ezetimibe + rosuvastatin versus ezetimibe alone (97% [90% CI 70-133%] and 113% [90% CI 89-143%] respectively). The mean  $C_{max}$  for ezetimibe and total ezetimibe were similar between ezetimibe + rosuvastatin versus ezetimibe alone (104% [90% CI 69-158%] and 118% [90% CI 83-170%] respectively). There was a small increase in the mean AUC and  $C_{max}$  for rosuvastatin during rosuvastatin and ezetimibe co-administration compared to rosuvastatin alone (119% [90% CI 87-162%] and 117% [90% CI 84-163%] respectively).

Although no pharmacokinetic studies of ezetimibe and rosuvastatin co-administration have been conducted in patients at increased risk of rosuvastatin exposure such as hepatic or renal impairment, there is the potential for increased exposure to rosuvastatin in patients receiving this combination.

### Ezetimibe

#### **Absorption**

After oral administration, ezetimibe is rapidly absorbed and extensively conjugated to a pharmacologically active phenolic glucuronide (ezetimibe-glucuronide). Mean maximum plasma concentrations ( $C_{max}$ ) occur within 1 to 2 hours for ezetimibe-glucuronide and 4 to 12

hours for ezetimibe. The absolute bioavailability of ezetimibe cannot be determined as the compound is virtually insoluble in aqueous media suitable for injection.

Concomitant food administration (high fat or non-fat meals) had no effect on the oral bioavailability of ezetimibe when administered as 10 mg tablets. Ezetimibe can be administered with or without food.

### **Distribution**

Ezetimibe and ezetimibe-glucuronide are bound 99.7% and 88 to 92% to human plasma proteins, respectively.

### **Metabolism**

Ezetimibe is metabolised primarily in the small intestine and liver via glucuronide conjugation (a phase II reaction) with subsequent biliary excretion. Minimal oxidative metabolism (a phase I reaction) has been observed in all species evaluated. Ezetimibe and ezetimibe-glucuronide are the major drug-derived compounds detected in plasma, constituting approximately 10 to 20% and 80 to 90% of the total drug in plasma, respectively. Both ezetimibe and ezetimibe-glucuronide are slowly eliminated from plasma with evidence of significant enterohepatic recycling. The half-life for ezetimibe and ezetimibe-glucuronide is approximately 22 hours.

### **Excretion**

Following oral administration of <sup>14</sup>C-ezetimibe (20 mg) to human subjects, total ezetimibe accounted for approximately 93% of the total radioactivity in plasma. Approximately 78% and 11% of the administered radioactivity were recovered in the faeces and urine, respectively, over a 10 day collection period. After 48 hours, there were no detectable levels of radioactivity in the plasma.

### Rosuvastatin

In a bioequivalence study comparing 40 mg OGN ROSUVASTATIN tablets with the innovator's tablets, following an oral administration of a single-dose of OGN ROSUVASTATIN to healthy subjects under fasting conditions, a mean peak plasma concentration ( $C_{max}$ ) of rosuvastatin of approximately 26.18 ng/mL was achieved within approximately 3.62 hours ( $T_{max}$ ).

### **Absorption**

Peak plasma levels occur 5 hours after dosing. Absorption increases linearly over the dose range. Absolute bioavailability is 20%. The half-life is 19 hours and does not increase with increasing dose. There is minimal accumulation on repeated once daily dosing.

### **Distribution**

Volume of distribution of rosuvastatin at steady state is approximately 134 litres. Rosuvastatin is approximately 90% bound to plasma proteins, mostly albumin.

### **Metabolism**

Rosuvastatin is not extensively metabolised; approximately 10% of a radiolabelled 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 rosuvastatin. Overall, greater than 90% of active plasma HMG-CoA reductase inhibitory activity is accounted for by rosuvastatin.

## **Excretion**

Rosuvastatin undergoes limited metabolism (approximately 10%), mainly to the N-desmethyl form, and 90% is eliminated as unchanged drug in the faeces with the remainder being excreted in the urine.

## **Characteristics in patients (special populations)**

### **Paediatric patients**

#### EZALO COMPOSITE PACK

EZALO COMPOSITE PACK is not recommended for use in children.

#### Ezetimibe

The absorption and metabolism of ezetimibe are similar between children and adolescents ( $\geq 10$  years) and adults. Limited PK data are available in children aged  $\geq 6$  to 10 years of age. Pharmacokinetic data in the paediatric population  $< 6$  years of age are not available.

### **Geriatric patients**

#### Ezetimibe

Plasma concentrations for total ezetimibe are about 2-fold higher in the elderly ( $\geq 65$  years) than in the young (18 to 45 years). LDL-C reduction and safety profile is comparable between elderly and young subjects treated with ezetimibe. Therefore, no dosage adjustment is necessary in the elderly.

### **Hepatic insufficiency**

#### Ezetimibe

After a single 10-mg dose of ezetimibe, the mean area under the curve (AUC) for total ezetimibe was increased approximately 1.7-fold in patients with mild hepatic insufficiency (Child Pugh score 5 or 6), compared to healthy subjects. In a 14-day, multiple-dose study (10 mg daily) in patients with moderate hepatic insufficiency (Child Pugh score 7 to 9), the mean AUC for total ezetimibe was increased approximately 4-fold on Day 1 and Day 14 compared to healthy subjects. No dosage adjustment is necessary for patients with mild hepatic insufficiency. Due to the unknown effects of the increased exposure to ezetimibe in patients with moderate or severe (Child Pugh score  $> 9$ ) hepatic insufficiency, ezetimibe is not recommended in these patients (see **Section 4.4 Special Warnings and Precautions for Use**).

### **Renal insufficiency**

#### Ezetimibe

After a single 10 mg dose of ezetimibe in patients with severe renal disease ( $n=8$ ; mean CrCl  $\leq 30$  mL/min/ $1.73$  m<sup>2</sup>), the mean AUC for total ezetimibe was increased approximately 1.5-fold, compared to healthy subjects ( $n=9$ ). This result is not considered clinically significant. No dosage adjustment is necessary for renally impaired patients.

An additional patient in this study (post-renal transplant and receiving multiple medications, including ciclosporin) had a 12-fold greater exposure to total ezetimibe.

### **Gender**

#### Ezetimibe

Plasma concentrations for total ezetimibe are slightly higher ( $< 20$  %) in women than in men. LDL-C reduction and safety profile is comparable between men and women treated with ezetimibe. Therefore, no dosage adjustment is necessary on the basis of gender.

### **Race**

#### Ezetimibe

Based on a meta-analysis of pharmacokinetic studies, there were no pharmacokinetic differences between Blacks and Caucasians.

### Rosuvastatin

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 US, have demonstrated an approximate 2-fold elevation in median exposure (AUC and  $C_{max}$ ) in Asian subjects when compared with a Caucasian control group (see **Section 4.2 Dose and Method of Administration** and **Section 4.4 Special Warnings and Precautions for Use**).

### **Genetic polymorphisms**

#### Rosuvastatin

Disposition of HMG-CoA reductase inhibitors, including rosuvastatin, involves OATP1B1 and BCRP transporter proteins. In patients with SLCO1B1 (OATP1B1) and/or ABCG2 (BCRP) genetic polymorphisms there is a risk of increased rosuvastatin exposure. The individual polymorphism of SLCO1B1, c.521CC, and the individual polymorphism of ABCG2, c.421AA, are associated with a higher rosuvastatin exposure (AUC) compared to the SLCO1B1 c.521TT and ABCG2 c.421CC genotypes, respectively. This specific genotyping is not established in clinical practice, but for patients who are known to have these types of polymorphisms, a lower daily dose of rosuvastatin is recommended (see **Section 4.2 Dose and Method of Administration**).

## **5.3 PRECLINICAL SAFETY DATA**

### **Genotoxicity**

#### EZALO COMPOSITE PACK

No genotoxicity studies have been conducted with ezetimibe and rosuvastatin in combination.

#### Ezetimibe

Ezetimibe alone or in combination with a statin (simvastatin, lovastatin, pravastatin or atorvastatin) or fenofibrate did not cause gene mutation in bacteria or chromosomal damage in human peripheral lymphocytes or bone marrow cells in mice.

#### Rosuvastatin

Rosuvastatin showed no evidence for mutagenic activity (*in vitro* assays of reverse mutation in bacterial cells and forward mutation in mammalian cells) or clastogenic activity (*in vitro* assay in mammalian cells and *in vivo* in the mouse micronucleus test). There have been no adequate studies investigating the potential carcinogenic or genotoxic activity of the main human metabolite of rosuvastatin, N-desmethyl rosuvastatin.

### **Carcinogenicity**

#### Ezetimibe

Two year dietary studies with ezetimibe alone in mice and rats showed no evidence of carcinogenic potential. The highest ezetimibe dose (500 mg/kg/day) in mice corresponds to exposure levels of approximately 4 and  $\geq 150$  times the adult human exposure for ezetimibe and total ezetimibe, respectively, based on AUC. Exposures in rats at the highest dose (1500 mg/kg/day in males and 500 mg/kg/day in females) correspond to approximately 2 and 14 times the adult human exposure for ezetimibe and total ezetimibe respectively.

There are no carcinogenicity studies with ezetimibe/statin or ezetimibe/fenofibrate combinations.

#### Rosuvastatin

Oral administration of rosuvastatin for 2 years to rats and mice increased the development of benign uterine stromal polyps in both species and malignant uterine sarcomas and adenocarcinomas in rats. Systemic concentrations of rosuvastatin (AUC) at the no-effect dose

for benign and malignant uterine tumours in either species were lower than or similar to those expected in humans taking 40 mg/day rosuvastatin.

## **Animal studies**

### Rosuvastatin

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/day based on AUC comparisons). 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/day based on AUC comparisons).

## **6 PHARMACEUTICAL PARTICULARS**

### **6.1 LIST OF EXCIPIENTS**

#### **EZETROL**

Each tablet of EZETROL contains croscarmellose sodium, lactose monohydrate, magnesium stearate, microcrystalline cellulose, povidone and sodium lauryl sulfate.

#### **OGN ROSUVASTATIN**

OGN ROSUVASTATIN tablets contain lactose, colloidal anhydrous silica, microcrystalline cellulose and silicon dioxide, maize starch, purified talc, sodium stearyl fumarate, hypromellose, mannitol, macrogol 6000, titanium dioxide, iron oxide yellow and iron oxide red.

### **6.2 INCOMPATIBILITIES**

Incompatibilities were either not assessed or not identified as part of the registration of this medicine. For information on interactions with other medicines and other forms of interactions, refer to Section 4.5.

### **6.3 SHELF LIFE**

The expiry date can be found on the packaging. In Australia, information on the shelf life can be found on the public summary of the Australian Register of Therapeutic Goods (ARTG).

### **6.4 SPECIAL PRECAUTIONS FOR STORAGE**

Store below 25°C and in the original package.

### **6.5 NATURE AND CONTENTS OF CONTAINER**

EZALO COMPOSITE PACK is a combination pack containing EZETROL® (ezetimibe) tablets 10 mg and OGN ROSUVASTATIN® (rosuvastatin, as calcium) tablets 5, 10, 20, 40 mg.

EZALO COMPOSITE PACK is supplied in 10-day calendar packs of 10 EZETROL (ezetimibe) tablets in PVC/PCTFE (Aclar)/Al blisters and 10 OGN ROSUVASTATIN (rosuvastatin, as calcium) tablets in Al/Al blisters. Each carton contains one 10-day calendar pack (for starter packs) or three 10-day calendar packs (for commercial packs).

### **6.6 SPECIAL PRECAUTIONS FOR DISPOSAL**

In Australia, any unused medicine or waste material should be disposed of by taking to your local pharmacy.

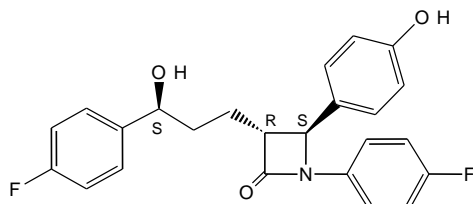
### **6.7 PHYSICOCHEMICAL PROPERTIES**

#### **Ezetimibe**

The chemical name is 1-(4-fluorophenyl)-3(*R*)-[3-(4-fluorophenyl)- 3(*S*)-hydroxypropyl]-4(*S*)-(4-hydroxyphenyl)-2-azetidinone. The empirical formula is C<sub>24</sub>H<sub>21</sub>F<sub>2</sub>NO<sub>3</sub>. Its molecular weight is 409.4.

Ezetimibe is a white, crystalline powder that is freely to very soluble in ethanol, methanol, and acetone and practically insoluble in water. Ezetimibe has a melting point of about 163°C and is stable at ambient temperature.

### Chemical structure



### CAS number

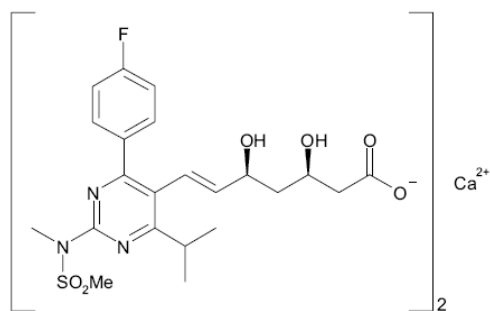
The CAS registry number is 163222-33-1.

### Rosuvastatin

The chemical name is bis [(*E*)-7-[4-(4-fluorophenyl)-6-isopropyl-2-[methyl(methylsulfonyl) amino] pyrimidin-5-yl] (3*R*, 5*S*)-3,5-dihydroxyhept-6-enoic acid] calcium salt. The empirical formula is (C<sub>22</sub>H<sub>27</sub>FN<sub>3</sub>O<sub>6</sub>S)<sub>2</sub>Ca. Its molecular weight is 1001.14. Rosuvastatin calcium is the (3*R*,5*S*,6*E*) enantiomer.

Rosuvastatin calcium is an amorphous solid, which is slightly soluble in water (7.8 mg/mL at 37°C), methanol, and ethanol, and has a pKa of 4.6.

### Chemical structure



### CAS number

The CAS registry number is 147098-20-2.

## 7 MEDICINE SCHEDULE (POISONS STANDARD)

Prescription Only Medicine (Schedule 4).

## 8 SPONSOR

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Macquarie Park NSW 2113  
Australia

## 9 DATE OF FIRST APPROVAL

26 November 2013

## 10 DATE OF REVISION

18 October 2023

## 11 REFERENCES

1. Ballantyne CM, Weiss R., Moccetti T., Vogt A, Eber B, Sosef F, Duffield E. Efficacy and Safety of Rosuvastatin 40 mg Alone or in Combination With Ezetimibe in Patients at High Risk of Cardiovascular Disease (Results from the EXPLORER Study). American Journal of Cardiology (2007) 99:5 (673-680).

2. Ballantyne CM, Schiebinger R, Cain V. Randomized comparison of rosuvastatin plus ezetimibe versus simvastatin plus ezetimibe: results of the GRAVITY study. Journal of the American College of Cardiology 55(10, Suppl. A): Abstract #1019-98, Mar 9, 2010

## SUMMARY TABLE OF CHANGES

Section Changed	Summary of new information
<b>4.5 INTERACTIONS WITH OTHER MEDICINES AND OTHER FORMS OF INTERACTIONS</b>	Addition of potential drug interaction between ticagrelor and rosuvastatin.
<b>4.8 ADVERSE EFFECTS (UNDESIRABLE EFFECTS)</b>	Addition of severe cutaneous adverse reactions (SCARs) and Drug induced liver injury as post marketing adverse events.

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