

### 1.3.1.1 PROFESSIONAL INFORMATION FOR MEDICINES FOR HUMAN USE

#### SCHEDULING STATUS

**S4**

#### 1. NAME OF THE MEDICINE

**AZITHROMYCIN NEW FORMULATION ASPEN** 500 mg film-coated tablets

#### 2. QUALITATIVE AND QUANTITATIVE COMPOSITION

Each film-coated tablet of AZITHROMYCIN NEW FORMULATION ASPEN contains azithromycin dihydrate equivalent to 500 mg azithromycin.

Sugar free.

For full list of excipients, see section 6.1.

#### 3. PHARMACEUTICAL FORM

Film-coated tablets.

AZITHROMYCIN NEW FORMULATION ASPEN is a white to off-white oval shaped, biconvex, film-coated tablet, debossed with "D 60" on one side and a score line on the other side.

The score line is only to facilitate breaking for ease of swallowing and not to divide into equal doses.

#### 4. CLINICAL PARTICULARS

##### 4.1. Therapeutic indications

**AZITHROMYCIN NEW FORMULATION ASPEN is indicated in adults for:**

- Mild to moderate infections caused by susceptible organisms in:
  - Lower respiratory tract infections including bronchitis due to *Haemophilus influenzae*, *Moraxella catarrhalis*, *Streptococcus pneumoniae* or *Staphylococcus*

*aureus* and pneumonia due to *Streptococcus pneumoniae* or *Haemophilus influenzae*;

- Uncomplicated skin and soft tissue infections;
- Sinusitis due to *Haemophilus influenzae*, *Streptococcus pneumoniae* or *Staphylococcus aureus*;
- An alternative to first line therapy of pharyngitis/tonsillitis.
- Sexually transmitted diseases in men and women in the treatment of:
  - Uncomplicated genital infections due to *Chlamydia trachomatis*;
  - Chancroid due to *Haemophilus ducreyi*.

**AZITHROMYCIN NEW FORMULATION ASPEN is indicated in children aged 1 year and older for:**

- Pharyngitis/tonsillitis and otitis media caused by susceptible organisms in children over 45 kg. (An azithromycin suspension is recommended in children under 45 kg).

#### **4.2. Posology and method of administration**

##### **Posology**

###### *Adults:*

For all indications other than sexually transmitted diseases, the total dose is 1,5 g which should be given as 500 mg daily for 3 days.

For sexually transmitted diseases caused by *Chlamydia trachomatis* or *Haemophilus ducreyi*, the dose is 1 g given as a single dose.

##### **Special populations**

###### *Elderly population*

Normal adult dosage is recommended. Elderly patients may be more susceptible to development of Torsade de Pointes dysrhythmia than younger patients (see section 4.4).

#### *Hepatic impairment*

AZITHROMYCIN NEW FORMULATION ASPEN is contraindicated in patients with severe hepatic impairment (see section 4.3).

#### **Paediatric population**

Children over 45 kg - dose as per adults.

This formulation is not suitable for children under 45 kg.

#### **Method of administration**

AZITHROMYCIN NEW FORMULATION ASPEN should be administered as a single daily dose with or without food.

AZITHROMYCIN NEW FORMULATION ASPEN should be taken whole.

#### **4.3. Contraindications**

AZITHROMYCIN NEW FORMULATION ASPEN is contraindicated in:

- Patients with hypersensitivity to azithromycin, erythromycin, any of the macrolide or ketolide antibiotics or to any excipients in AZITHROMYCIN NEW FORMULATION ASPEN (see section 6.1).
- Because of the theoretical possibility of ergotism, AZITHROMYCIN NEW FORMULATION ASPEN and ergot derivatives should not be co-administered.

- **Hepatic impairment**

As the liver is the principal route of excretion of azithromycin, as contained in AZITHROMYCIN NEW FORMULATION ASPEN, it should not be prescribed in patients with hepatic disease.

#### **4.4. Special warnings and precautions for use**

##### *Hypersensitivity*

Serious allergic reactions, including angioedema and anaphylaxis and dermatologic reactions including Stevens-Johnson syndrome, Acute Generalised Exanthemateous Pustulosis (AGEP), Drug Reaction with Eosinophilic and systemic symptoms (DRESS) and toxic epidermal necrolysis have been reported. Some of these reactions with AZITHROMYCIN NEW FORMULATION ASPEN have resulted in recurrent symptoms and required a longer period of observation and treatment. If an allergic reaction occurs, AZITHROMYCIN NEW FORMULATION ASPEN should be discontinued, and appropriate therapy should be instituted. Medical practitioners to be aware that reappearance of the allergic symptoms may occur when symptomatic therapy is discontinued.

##### *Hepatotoxicity*

Since the liver is the principal route of elimination for azithromycin, AZITHROMYCIN NEW FORMULATION ASPEN should not be used in patients with hepatic disease (see section 4.3).

Abnormal liver function, hepatitis, cholestatic jaundice, hepatic necrosis, and hepatic failure, some of which have resulted in death, have been reported. Discontinue AZITHROMYCIN NEW FORMULATION ASPEN immediately if signs and/or symptoms of hepatitis occur.

##### *Ergot derivatives*

In patients receiving ergot derivatives, ergotism has been precipitated by co-administration of some macrolide antibiotics. There are no data concerning the possibility of an interaction between ergot and AZITHROMYCIN NEW FORMULATION ASPEN. However, because of the theoretical possibility of ergotism, AZITHROMYCIN NEW FORMULATION ASPEN and ergot derivatives should not be co-administered (see section 4.3).

### *Superinfection*

Observation for signs of superinfection with non-susceptible organisms, including fungi, is recommended.

### *Pseudomembranous colitis*

Pseudomembranous colitis has been reported and may range in severity from mild to life threatening. Therefore, it is important to consider this diagnosis in patients with diarrhoea subsequent to administration of AZITHROMYCIN NEW FORMULATION ASPEN.

### *Clostridium difficile-associated diarrhoea*

*Clostridium difficile*-associated diarrhoea (CDAD) due to overgrowth of *Clostridium difficile* in the gut, has been reported with use of AZITHROMYCIN NEW FORMULATION ASPEN, and may range in severity from mild diarrhoea to fatal colitis. If CDAD is suspected or confirmed, ongoing AZITHROMYCIN NEW FORMULATION ASPEN use should be discontinued. Appropriate fluid and electrolyte management, protein supplementation, antibiotic treatment of *Clostridium difficile*, and surgical evaluation should be instituted as clinically indicated.

### *Renal impairment*

In patients with a creatinine clearance < 30, a 33 % increase in systemic exposure to AZITHROMYCIN NEW FORMULATION ASPEN was observed (see section 5). Acute renal failure and interstitial nephritis have been reported (see section 4.8).

### *Prolongation of the QT interval*

Prolonged cardiac repolarisation and QT interval, imparting a risk of developing cardiac dysrhythmia and Torsade de Pointes, have been seen in treatment with other macrolides including AZITHROMYCIN NEW FORMULATION ASPEN (see section 4.8).

Prescribers should specifically consider the risk of QT prolongation, which can be fatal in at-risk groups including:

- Patients with congenital or documented QT prolongation.
- Patients currently receiving treatment with other active substances known to prolong QT interval such as antidysrhythmics of classes IA and III; antipsychotic agents; antidepressants; and fluoroquinolones.
- Patients with electrolyte disturbance, particularly in cases of hypokalaemia and hypomagnesaemia.
- Patients with clinically relevant bradycardia, cardiac dysrhythmia or cardiac insufficiency.
- Elderly patients: elderly patients may be more susceptible to medicine-associated effects on the QT interval.

#### *Myasthenia gravis*

Exacerbation of symptoms of myasthenia gravis and new-onset of myasthenia syndrome have been reported in patients receiving azithromycin therapy.

#### **Paediatric population**

The safety and efficacy of AZITHROMYCIN NEW FORMULATION ASPEN has not been established in children less than 1 year of age.

#### **4.5. Interaction with other medicines and other forms of interaction**

##### *Ergot derivatives:*

Because of the theoretical possibility of ergotism, AZITHROMYCIN NEW FORMULATION ASPEN and ergot derivatives should not be co-administered (see section 4.3 and section 4.4).

*Cetirizine:*

In healthy volunteers, co-administration of a 5-day regimen of azithromycin with cetirizine 20 mg at steady-state resulted in no pharmacokinetic interaction and no significant changes in the QT interval.

Azithromycin does not interact significantly with the hepatic cytochrome P450 system. It is not believed to be associated with the pharmacokinetic medicine interactions seen with erythromycin. Hepatic cytochrome P450 induction or inactivation via cytochrome-metabolite complex does not occur with azithromycin.

**Pharmacokinetic studies have been conducted between azithromycin and the following medicines known to undergo significant cytochrome P450 mediated metabolism:**

*Atorvastatin:*

Co-administration of atorvastatin (10 mg daily) and azithromycin (500 mg daily) did not alter the plasma concentrations of atorvastatin (based on a HMG CoA-reductase inhibition assay). However, post-marketing cases of rhabdomyolysis in patients receiving azithromycin with statins have been reported.

*Efavirenz:*

Co-administration of a 600 mg single dose of azithromycin and 400 mg efavirenz daily for 7 days did not result in any clinically significant pharmacokinetic interactions.

*Fluconazole:*

Co-administration of a single dose of 1 200 mg azithromycin did not alter the pharmacokinetics of a single dose of 800 mg fluconazole. Total exposure and half-life of azithromycin were unchanged by the co-administration of fluconazole, however, a clinically insignificant decrease in  $C_{max}$  (18 %) of azithromycin was observed.

*Indinavir:*

Co-administration of a single dose of 1 200 mg azithromycin had no statistically significant effect on the pharmacokinetics of indinavir administered as 800 mg three times daily for 5 days.

*Midazolam:*

In healthy volunteers, co-administration of azithromycin 500 mg/day for 3 days did not cause clinically significant changes in the pharmacokinetic properties and pharmacodynamics properties of a single 15 mg dose of midazolam.

*Nelfinavir:*

Co-administration of azithromycin (1 200 mg) and nelfinavir at steady state (750 mg three times daily) resulted in increased azithromycin concentrations. No clinically significant adverse effects were observed and although a dose adjustment of AZITHROMYCIN NEW FORMULATION ASPEN is not recommended when administered in combination with nelfinavir, close monitoring for known side effects of AZITHROMYCIN NEW FORMULATION ASPEN is warranted.

*Sildenafil:*

In normal healthy male volunteers, there was no evidence of an effect of azithromycin (500 mg daily for 3 days) on the AUC and  $C_{max}$ , of sildenafil or its major circulating metabolite.

*Triazolam:*

In 14 healthy volunteers, co-administration of azithromycin 500 mg on day 1 and 250 mg on day 2 with 0,125 mg triazolam on day 2 had no significant effect on any of the pharmacokinetic variables for triazolam compared to triazolam and placebo.

*Trimethoprim/sulfamethoxazole:*

Co-administration of trimethoprim/sulfamethoxazole (160 mg/800 mg) for 7 days with azithromycin 1 200 mg on day 7 had no significant effect on peak concentrations, total exposure or urinary excretion of either trimethoprim or sulfamethoxazole. Azithromycin serum concentrations were similar to those seen in other studies.

**Special administration advised with the following:**

*Antacids:*

In a pharmacokinetic study investigating the effects of simultaneous administration of antacids with azithromycin, no effect on overall bioavailability was seen although peak serum concentrations were reduced by approximately 24 %. In patients receiving both AZITHROMYCIN NEW FORMULATION ASPEN and antacids, the medicines should not be taken simultaneously. AZITHROMYCIN NEW FORMULATION ASPEN tablets should be taken at least 1 hour before or 2 hours after an antacid.

*Cimetidine:*

A single dose of cimetidine administered 2 hours before AZITHROMYCIN NEW FORMULATION ASPEN had no effect on the pharmacokinetics of AZITHROMYCIN NEW FORMULATION ASPEN.

**No pharmacokinetic interactions were reported in studies of AZITHROMYCIN NEW**

**FORMULATION ASPEN co-administered with:**

*Carbamazepine, methylprednisolone, didanosine (dideoxyinosine), theophylline, rifabutin*

(however co-administration of AZITHROMYCIN NEW FORMULATION ASPEN and rifabutin was associated with the development of neutropenia. A causal relationship to its combination with AZITHROMYCIN NEW FORMULATION ASPEN has not been established (see section 4.8)) and zidovudine (single 1 000 mg doses and multiple 1 200 mg or 600 mg doses of azithromycin had little effect on the plasma pharmacokinetics or urinary excretion of zidovudine or its glucuronide metabolite. However, administration of azithromycin increased the concentrations of phosphorylated zidovudine, the clinically active metabolite, in peripheral blood mononuclear cells. The clinical significance of this finding is unclear, but it may be of benefit to patients).

**Special precautionary monitoring is advised with the following:**

*Ciclosporin:*

In a pharmacokinetic study with healthy volunteers that were administered a 500 mg/day oral dose of azithromycin for 3 days and were then administered a single 10 mg/kg oral dose of ciclosporin, the resulting ciclosporin  $C_{max}$  and  $AUC_{0-5}$  were found to be significantly elevated ( $C_{max}$  increase by 24 % and  $AUC_{0-5}$  was 5 107 and 4 210 ngh/mL with and without azithromycin, respectively,  $p \leq 0,05$ ). Consequently, caution should be exercised before co-administration of these two medicines. If co-administration is necessary, ciclosporin levels should be monitored and the dose adjusted accordingly.

*P-glycoprotein substrates:*

Concomitant administration of AZITHROMYCIN NEW FORMULATION ASPEN with P-glycoprotein substrates such as digoxin or dabigatran has been reported to result in increased

serum levels of the P-glycoprotein substrate. Therefore, if AZITHROMYCIN NEW FORMULATION ASPEN and P-glycoprotein substrates such as digoxin or dabigatran are administered concomitantly, the possibility of elevated serum medicine concentrations should be considered. Clinical monitoring and serum monitoring of digoxin levels during treatment with AZITHROMYCIN NEW FORMULATION ASPEN and after its discontinuation are necessary.

Some of the macrolide antibiotics have been reported to impair the metabolism of digoxin (in the gut) in some patients. Therefore, in patients receiving concomitant AZITHROMYCIN NEW FORMULATION ASPEN, a related azalide antibiotic, and digoxin the possibility of raised digoxin levels should be borne in mind.

#### *Warfarin:*

In a pharmacokinetic interaction study, azithromycin did not alter the anticoagulant effect of a single 15 mg dose of warfarin administered to healthy volunteers. However, there have been reports received in the post-marketing period of potentiated anticoagulation subsequent to co-administration of azithromycin and warfarin. Although a causal relationship has not been established, consideration should be given to the frequency of monitoring prothrombin time when AZITHROMYCIN NEW FORMULATION ASPEN is used in patients receiving coumarin-type oral anticoagulants.

## **4.6 Fertility, pregnancy and lactation**

The safety of AZITHROMYCIN NEW FORMULATION ASPEN in pregnancy and lactation has not been established.

### **Pregnancy**

Animal reproduction studies have been performed at doses up to moderately maternally toxic dose concentrations. In these studies, no evidence of harm to the foetus due to azithromycin

was found. There are, however, no adequate and well-controlled studies in pregnant women. Because animal reproduction studies are not always predictive of human response, AZITHROMYCIN NEW FORMULATION ASPEN should be used during pregnancy only if clearly needed.

### **Breastfeeding**

Azithromycin has been reported to be secreted into human breast milk, but there are no adequate and well-controlled clinical studies in nursing women that have characterised the pharmacokinetics of azithromycin excretion into human breast milk.

AZITHROMYCIN NEW FORMULATION ASPEN should only be used in lactating women where adequate alternatives are not available.

### **Fertility**

No data.

## **4.7 Effects on ability to drive and use machines**

Side effects such as dizziness, convulsions, vertigo, somnolence, and syncope have been reported with usage of AZITHROMYCIN NEW FORMULATION ASPEN. These side effects may affect a patient's ability to drive or operate machinery.

## **4.8 Undesirable effects**

### *a. Tabulated list of adverse reactions*

| <b>System organ class</b>                   | <b>Frequent</b> | <b>Less frequent</b> | <b>Frequency unknown</b> |
|---------------------------------------------|-----------------|----------------------|--------------------------|
| <b>Blood and lymphatic system disorders</b> |                 | Neutropenia          |                          |
| <b>Immune system disorders</b>              |                 | Angioedema           |                          |

|                                               |                                                       |                                                                                                                |         |
|-----------------------------------------------|-------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|---------|
| <b>Eye disorders</b>                          |                                                       | Abnormal vision                                                                                                |         |
| <b>Ear and labyrinth disorders</b>            |                                                       | Hearing impairment including hearing loss, deafness and/or tinnitus                                            |         |
| <b>Cardiac disorders</b>                      |                                                       | Chest pains, dysrhythmias including ventricular tachycardia, palpitations, QT prolongation, Torsade de Pointes |         |
| <b>Gastrointestinal disorders</b>             | Abdominal discomfort (pain/cramps), diarrhoea, nausea | Flatulence, loose stools, vomiting                                                                             | Melaena |
| <b>Hepato-biliary disorders</b>               |                                                       | Abnormal liver function                                                                                        |         |
| <b>Skin and subcutaneous tissue disorders</b> | Rash                                                  | Allergic reactions                                                                                             |         |
| <b>Renal and urinary disorders</b>            |                                                       | Nephritis                                                                                                      |         |

In post-marketing experience, the following additional undesirable effects have been reported with frequency unknown:

| <b>System organ class</b>                   | <b>Frequency unknown</b>                                                                                                             |
|---------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| <b>Infections and infestations</b>          | Moniliasis, vaginitis                                                                                                                |
| <b>Blood and lymphatic system disorders</b> | Thrombocytopenia                                                                                                                     |
| <b>Immune system disorders</b>              | Anaphylaxis, angioedema                                                                                                              |
| <b>Metabolism and nutrition disorders</b>   | Anorexia                                                                                                                             |
| <b>Psychiatric disorders</b>                | Nervousness, aggressive reaction, agitation, anxiety                                                                                 |
| <b>Nervous system disorders</b>             | Dizziness, convulsions, headache, hyperactivity, hypoesthesia, paraesthesia, somnolence, syncope, taste/smell perversion and/or loss |
| <b>Ear and labyrinth disorders</b>          | Deafness, tinnitus, impaired hearing, vertigo                                                                                        |

|                                               |                                                                                                                                                                                                  |
|-----------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Cardiac disorders</b>                      | Palpitations, dysrhythmias including ventricular tachycardia, QT prolongation, Torsade de Pointes                                                                                                |
| <b>Vascular disorders</b>                     | Hypotension                                                                                                                                                                                      |
| <b>Gastrointestinal disorders</b>             | Vomiting/ diarrhoea (rarely resulting in dehydration), dyspepsia, constipation, pseudomembranous colitis, pancreatitis, tongue discolouration                                                    |
| <b>Hepatobiliary disorders</b>                | Hepatitis and cholestatic jaundice, hepatic necrosis and hepatic failure, which have rarely resulted in death                                                                                    |
| <b>Skin and subcutaneous tissue disorders</b> | Allergic reactions including pruritus, rash, photosensitivity, oedema, urticaria, serious skin reactions including erythema multiforme, Stevens- Johnson syndrome and toxic epidermal necrolysis |
| <b>Musculoskeletal disorders</b>              | Arthralgia                                                                                                                                                                                       |
| <b>Renal and urinary disorders</b>            | Interstitial nephritis, acute renal failure                                                                                                                                                      |
| <b>General disorders</b>                      | Asthenia, fatigue, malaise                                                                                                                                                                       |

#### *Reporting of suspected adverse reactions*

Reporting suspected adverse reactions after authorisation of the medicine is important. It allows continued monitoring of the benefit/risk balance of the medicine. Healthcare providers are asked to report any suspected adverse reactions to:

**SAHPRA:** <https://www.sahpra.org.za/health-products-vigilance/>

**Aspen Pharmacare:**

**E-mail:** [Drugsafety@aspenpharma.com](mailto:Drugsafety@aspenpharma.com)

**Tel:** 0800 118 088

#### **4.6. Overdose**

##### **Symptoms**

Adverse events experienced in higher than recommended doses were similar to those seen at normal doses. Typical symptoms of overdosage with macrolide antibiotics include hearing loss, severe nausea, vomiting and diarrhoea.

## **Treatment**

In the event of overdose, general symptomatic and supportive measures are indicated as required.

## **5. PHARMACOLOGICAL PROPERTIES**

### **5.1. Pharmacodynamic properties**

Pharmacotherapeutic group: Antibacterials for systemic use, macrolides

ATC code: J01FA10

#### *Mechanism of action*

Azithromycin is an azalide, a subclass of the macrolide antibiotics. Chemically it is derived by insertion of a nitrogen atom into the lactone ring of erythromycin A. The chemical name of azithromycin is 9-deoxy-9a-aza- 9a-methyl-9a-homoerythromycin A. The molecular weight is 749,0.

Azithromycin binds to the 23S rRNA of the 50S ribosomal subunit. It blocks protein synthesis by inhibiting the transpeptidation/translocation step of protein synthesis and by inhibiting the assembly of the 50S ribosomal subunit.

#### *Cardiac electrophysiology:*

QTc interval-prolongation was studied in a randomised, placebo-controlled parallel trial in 116 healthy subjects who received either chloroquine (1 000 mg) alone or in combination with azithromycin (500 mg, 1 000 mg and 1 500 mg once daily). Co-administration of azithromycin significantly increased the QTc interval in a dose- and concentration-dependent manner. In comparison to chloroquine alone, the maximum mean (95 % upper confidence bound) increases in QTcF were 5 (10) ms, 7 (12) ms and 9 (14) ms with the co-administration of 500 mg, 1 000 mg and 1 500 mg azithromycin, respectively.

Efflux pumps occur in a number of bacteria, including Gram-negatives, such as *Haemophilus influenzae* (where they may determine intrinsically higher MICs) and staphylococci. In streptococci and enterococci, an efflux pump that recognises 14- and 15-membered macrolides (which include, respectively, erythromycin and azithromycin) is encoded by *mef(A)* genes.

Azithromycin demonstrates cross-resistance with erythromycin-resistant Gram-positive organisms. Ribosomal modifications determine cross-resistance with other classes of antibiotics whose ribosomal binding sites overlap that of the macrolides: the lincosamides (including clindamycin), and the streptogramins B (which include, for example, the quinupristin component of quinupristin/dalfopristin). A decrease in macrolide susceptibility over time has been noted in particular in *Streptococcus pneumoniae* and *Staphylococcus aureus*, and has also been observed in viridans streptococci and in *Streptococcus agalactiae*.

*Azithromycin has in vitro activity against:*

Aerobic and facultative Gram-positive bacteria (erythromycin-susceptible organisms).

Aerobic and facultative Gram-negative bacteria.

*In vitro resistance to azithromycin:*

Azithromycin-resistant organisms are encountered relatively frequently among aerobic and facultative Gram-positive bacteria, in particular among methicillin-resistant *Staphylococcus aureus* (MRSA) and penicillin-resistant *Streptococcus pneumoniae* (PRSP).

*Pseudomonas* spp. and most *Enterobacteriaceae* are inherently resistant to azithromycin, although azithromycin has been used to treat *Salmonella enterica*, *Pneumocystis jirovecii* and *Toxoplasma gondii* infections.

*In vitro* sensitivity does not necessarily imply *in vivo* efficacy.

## **5.2. Pharmacokinetic properties**

### **Absorption**

Following oral administration in humans, azithromycin is widely distributed throughout the body. Bioavailability is approximately 37 %. No significant decrease in bio-availability was observed when azithromycin was administered with a meal. The time taken to peak plasma levels is 2 to 3 hours.

In patients hospitalised with community acquired pneumonia receiving single daily one-hour intravenous infusions for 2 to 5 days of 500 mg azithromycin at a concentration of 2 mg/mL, the mean  $C_{\max} \pm S.D.$  achieved was  $3,63 \pm 1,60 \mu\text{g/mL}$ , while the 24-hour trough level was  $0,20 \pm 0,15 \mu\text{g/mL}$ , and the  $AUC_{24}$  was  $9,60 \pm 4,80 \mu\text{g}\cdot\text{h/mL}$ . The mean  $C_{\max}$ , 24-hour trough and  $AUC_{24}$  values were  $1,14 \pm 0,14 \mu\text{g/mL}$ ,  $0,18 \pm 0,02 \mu\text{g/mL}$ , and  $8,03 \pm 0,86 \mu\text{g}\cdot\text{h/mL}$ , respectively, in normal volunteers receiving a 3-hour intravenous infusion of 500 mg azithromycin at a concentration of 1 mg/mL.

### **Distribution**

Kinetic studies of variable times ranging from hours to days after oral intake have shown markedly higher azithromycin levels in tissue than in plasma (up to 50 times the maximum observed concentration in plasma) indicating that the medicine is highly tissue bound. Concentrations in target tissues such as lung, tonsil and prostate exceed the MIC90 for likely pathogens after a single dose of 500 mg.

## **Elimination**

Plasma terminal elimination half-life closely reflects the tissue depletion half-life of 2 to 4 days. Approximately 12 % of an intravenously administered dose is excreted in the urine over 3 days as azithromycin, the majority in the first 24 hours. Biliary excretion of azithromycin is a major route of elimination for unchanged medicine following oral administration. Very high concentrations of unchanged medicine have been found in human bile, together with 10 metabolites, formed by N- and O-demethylation, by hydroxylation of the desosamine and aglycone rings, and by cleavage of the cladinose conjugate. Comparison of HPLC and microbiological assays in tissues suggests that metabolites play no part in the microbiological activity of azithromycin.

In a multiple-dose study in 12 normal volunteers utilising a 500 mg (1 mg/mL) one-hour intravenous- dosage regimen for five days, the amount of administered azithromycin dose excreted in urine in 24 hours was about 11 % after the 1st dose and 14 % after the 5th dose. These values are greater than the reported 6 % excreted unchanged in urine after oral administration of azithromycin.

### *Special populations*

#### *Renal impairment*

The pharmacokinetics of azithromycin in adult patients with mild-to-moderate renal impairment (GFR 10 to 80 mL/min) were not affected following a single 1 g dose of immediate release azithromycin. Statistically significant differences in  $AUC_{0-120}$  (8,8 mg × hr/mL vs. 11,7 mg × hr/mL),  $C_{max}$  (1,0 mg/mL vs. 1,6 mg/mL) and  $CL_r$  (2,3 mL/min/kg vs. 0,2 mL/min/kg) were observed between the group with severe renal impairment (GFR < 10 mL/min) and the group with normal renal function.

#### *Hepatic impairment*

In patients with mild (Class A) to moderate (Class B) hepatic impairment, there is no evidence of a marked change in serum pharmacokinetics of azithromycin compared to normal hepatic function. In these patients, urinary recovery of azithromycin appears to increase perhaps to compensate for reduced hepatic clearance.

Azithromycin has not been studied and should not be used in patients with severe hepatic impairment.

### *Elderly*

Elderly volunteers (> 65 years) had slightly higher AUC values than in young volunteers (< 40 years) after a 5-day regimen, but these are not considered clinically significant, and hence no dose adjustment is recommended.

## **6. PHARMACEUTICAL PARTICULARS**

### **6.1. List of excipients**

Calcium hydrogen phosphate anhydrous, croscarmellose sodium, hypromellose (E464), magnesium stearate, pregelatinised maize starch, sodium lauryl sulphate, titanium dioxide (E171), triacetin.

### **6.2. Incompatibilities**

Not applicable.

### **6.3. Shelf life**

24 months.

### **6.4. Special precautions for storage**

Store at or below 25 °C.

**6.5. Nature and contents of container**

PVC/Aluminium blisters in pack sizes of 3 film-coated tablets in a single blister, packed into an outer carton.

**6.6. Special precautions for disposal of a used medicine or waste materials derived from such medicine and other handling of the product**

No special requirements.

**7. HOLDER OF THE CERTIFICATE OF REGISTRATION**

PHARMACARE LIMITED

Healthcare Park

Woodlands Drive

Woodmead 2191

**8. REGISTRATION NUMBER**

52/20.1.1/0305

**9. DATE OF FIRST AUTHORISATION**

24 July 2020

**10. DATE OF REVISION OF TEXT**

24 July 2020

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