

SUMMARY OF PRODUCT CHARACTERISTICS

1. NAME OF THE MEDICINAL PRODUCT

Cefalexin 500

2. QUALITATIVE AND QUANTITATIVE COMPOSITION

Each hard gelatin capsule contains:

Cefalexin BP Eq. Anhydrous Cefalexin.....500 mg

Excipients.....q.s.

Approved colours used in capsule

3. PHARMACEUTICAL FORM

Red/white, Hard gelatin size '0' capsules, filled with Off-white granular powder.

4. CLINICAL PARTICULARS

4.1 Therapeutic indications

Cefalexin is a semi-synthetic cephalosporin antibiotic for oral administration.

Cefalexin is indicated in the treatment of the following infections due to susceptible micro-organisms:

- Respiratory tract infections
- Otitis media
- Skin and soft tissue infections
- Bone and joint infections
- Genito-urinary tract infections, including acute prostatitis
- Dental infections

Cefalexin is active against the following organisms in vitro: β -haemolytic streptococci; staphylococci, including coagulase-positive, coagulase-negative and penicillinase-producing strains; *Streptococcus pneumoniae*; *Escherichia coli*; *Proteus mirabilis*; *Klebsiella* species, *Haemophilus influenzae*; *Branhamella catarrhalis*.

Most strains of enterococci (*Streptococcus faecalis*) and a few strains of staphylococci are resistant to cefalexin. Cefalexin is inactive against most strains of enterobacter, *morganella morganii*, *pr. Vulgaris*, *Colstridium difficile*, and the following species: legionella, campylobacter, pseudomonas or herellea species. When tested by in vitro methods, staphylococci exhibit cross-resistance between cefalexin and methicillin-type antibiotics.

4.2 Posology and method of administration

Adults

The adult dosage ranges from 1-4 g daily in divided doses; most infections will respond to a dosage of 500 mg every 8 hours.

For skin and soft tissue infections, streptococcal pharyngitis and mild, uncomplicated urinary tract infections, the usual dosage is 250 mg every 6 hours, or 500 mg every 12 hours.

More severe infections or those caused by less susceptible organisms, may need larger doses.

If daily doses of cefalexin greater than 4g are required parenteral cephalosporins, in appropriate doses, should be considered.

Elderly and patients with impaired renal function:

As for adults although dosage should be reduced to a daily maximum of 500mg if renal function is severely impaired (glomerular filtration rate < 10ml/min).

Children

The recommended daily dosage for children is 25-50mg/kg (10-20mg/lb) in divided doses.

For skin, soft tissue infections, streptococcal pharyngitis and mild, uncomplicated urinary tract infections, the total daily dose may be divided and administered every 12 hours.

For most infections the following schedule is suggested:

Children under 5 years: 125mg every 8 hours.

Children 5 years and over: 250mg every 8 hours.

In severe infections, the dosage may be doubled.

In the therapy of otitis media, clinical studies have shown that a dosage of 75-100mg/kg/day in 4 divided doses is required.

In the treatment of beta-haemolytic streptococcal infections, a therapeutic dose should be administered for at least 10 days.

Route of administration

Oral

The usual recommended adult dose of Cefamor is 250 mg to 500 mg given at 6 hourly intervals in severe infections the dose can be increased to 3- 4 gram per day, given in divided doses. In endocarditis an oral dose of 6 grams per day has been used sometimes with probenecid

In infants and children Cefamor is recommended in a dose of 25 mg to 50 mg per kg body weight daily administered in two or three divided doses. In more severe infections, 100 mg/kg body weight per day may be given to a maximum of 4 gms / day in four divided doses.

4.3 Contraindications

Known hypersensitivity to cephalosporins.

Cefalexin is contraindicated in patients with known allergy to the cephalosporins group of antibiotics or to any of the excipients listed in section 6.1.

Cefalexin should be given cautiously to patients who have shown hypersensitivity to other drugs. Cephalosporins should be given with caution to penicillin-sensitive patients, as there is some evidence of partial cross-allergenicity between the penicillins and the cephalosporins. Patients have had severe reactions (including anaphylaxis) to both drugs.

Cefalexin is contraindicated in patients with acute porphyria.

4.4 Special warnings and precautions for use

Before instituting therapy with cefalexin, every effort should be made to determine whether the patient has had previous hypersensitivity reactions to the cephalosporins, penicillins or other drugs. Cefalexin should be given cautiously to penicillin-sensitive patients. There is some clinical and laboratory evidence of partial cross-allergenicity of the penicillins and cephalosporins. Patients have had severe reactions (including anaphylaxis) to both drugs.

If an allergic reaction to cefalexin occurs the drug should be discontinued and the patient treated with the appropriate agents. Prolonged use of cefalexin may result in the overgrowth of non-susceptible organisms. Careful observation of the patient is essential. If superinfection occurs during therapy, appropriate measures should be taken.

Pseudomembranous colitis has been reported with virtually all broad-spectrum antibiotics, including macrolides, semisynthetic penicillins and cephalosporins. It is important, therefore, to consider its diagnosis in patients who develop diarrhoea in association with the use of antibiotics. Such colitis may range in severity from mild to life-threatening. Mild cases of pseudomembranous colitis usually respond to drug discontinuance alone. In moderate to severe cases, appropriate measures should be taken.

Cefalexin should be administered with caution in the presence of markedly impaired renal function. Careful clinical and laboratory studies should be made because safe dosage may be lower than that usually recommended.

Positive direct Coombs' tests have been reported during treatment with the cephalosporin antibiotics. In haematological studies, or in transfusion cross-matching procedures when antiglobulin tests are performed on the minor side, or in Coombs' testing of newborns whose mothers have received cephalosporin antibiotics before parturition, it should be recognised that a positive Coombs' test may be due to the drug.

A false positive reaction for glucose in the urine may occur with Benedict's or Fehling's solutions or with copper sulphate test tablets.

Patients with rare hereditary problems of galactose intolerance, the Lapp lactase deficiency or glucose-galactose malabsorption should not take this medicine.

Acute generalized exanthematous pustulosis (AGEP) has been reported in association with cefalexin treatment. At the time of prescription patients should be advised of the signs and symptoms and monitored closely for skin reactions. If signs and symptoms suggestive of these reactions appear, cefalexin should be withdrawn immediately and an alternative treatment considered. Most of these reactions occurred most likely in the first week during treatment.

Cefalexin capsule contains lactose

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

4.5 Interaction with other medicinal products and other forms of Interaction

As with other beta-lactam drugs, renal excretion of cefalexin is inhibited by probenecid. In a single study of 12 healthy subjects given single 500mg doses of cefalexin and metformin, plasma metformin C_{max} and AUC increased by an average of 34% and 24%, respectively, and metformin renal clearance decreased by an average of 14%. No side-effects were reported in the 12 healthy subjects in this study. No information is available about the interaction of cefalexin and metformin following multiple dose administration. The clinical significance of this study is unclear, particularly as no cases of “lactic acidosis” have been reported in association with concomitant metformin and cefalexin treatment.

Hypokalaemia has been described in patient taking cytotoxic drugs for leukaemia when they were given gentamicin and cephalixin.

4.6 Pregnancy and lactation

Usage in pregnancy: Although laboratory and clinical studies have shown no evidence of teratogenicity, caution should be exercised when prescribing for the pregnant patient.

Usage in nursing mothers: The excretion of cefalexin in human breast milk increased up to 4 hours following a 500mg dose. The drug reached a maximum level of 4 micrograms/ml, then decreased gradually and had disappeared 8 hours after administration. Caution should be exercised when cefalexin is administered to a nursing woman, since the neonate is presented with the risk of candidiasis and CNS toxicity due to immaturity of the blood-brain barrier. There is a theoretical possibility of later sensitisation.

4.7 Effects on ability to drive and use machines

No effects are foreseen.

4.8 Undesirable effects

Gastro-intestinal: Symptoms of pseudomembranous colitis may appear either during or after antibiotic treatment. Nausea and vomiting have been reported rarely. The most frequent side-effect has been diarrhoea. It was very rarely severe enough to warrant cessation of therapy. Dyspepsia and abdominal pain have also occurred. As with some penicillins and some other cephalosporins, transient hepatitis and cholestatic jaundice have been reported rarely.

Hypersensitivity: Allergic reactions have been observed in the form of rash, urticaria, angioedema, and, rarely, erythema multiforme, Stevens-Johnson syndrome, and toxic epidermal necrolysis. These reactions usually subsided upon discontinuation of the drug, although in some cases supportive therapy may be necessary. Anaphylaxis has also been reported.

Haemic and lymphatic system: Eosinophilia, neutropenia, thrombocytopenia, and haemolytic anaemia have been reported.

Hepatic: As with some penicillins and some other cephalosporins, transient hepatitis and cholestatic jaundice have been reported rarely. Slight elevations of AST and ALT have been reported.

Skin and subcutaneous tissue disorders: Not known – Acute generalised exanthematous pustulosis (AGEP)

Other: These have included genital and anal pruritus, genital candidiasis, vaginitis and vaginal discharge, dizziness, fatigue, headache, agitation, confusion, hallucinations, arthralgia, arthritis, and joint disorder. Hyperactivity, nervousness, sleep disturbances and hypertonia have also been reported. Reversible interstitial nephritis has been reported rarely and toxic epidermal necrolysis have been observed rarely.

Reporting of suspected adverse reactions

Reporting suspected adverse reactions after authorisation of the medicinal product is important. It allows continued monitoring of the benefit/risk balance of the medicinal product. Healthcare professionals are asked to report any suspected adverse reactions via the email ID: Safety.cadila.global@cadilapharma.co.in

4.9 Overdose

Symptoms of oral overdose may include nausea, vomiting, epigastric distress, diarrhoea, and haematuria.

In the event of severe overdosage, general supportive care is recommended, including close clinical and laboratory monitoring of haematological, renal, and hepatic functions, and coagulation status until the patient is stable. Forced diuresis, peritoneal dialysis, haemodialysis, or charcoal haemoperfusion have not been established as beneficial for an overdose of cefalexin. It would be extremely unlikely that one of these procedures would be indicated.

Unless 5 to 10 times the normal total daily dose has been ingested, gastro-intestinal decontamination should not be necessary.

There have been reports of haematuria, without impairment of renal function, in children accidentally ingesting more than 3.5g of cefalexin in a day. Treatment has been supportive (fluids) and no sequelae have been reported.

5. PHARMACOLOGICAL PROPERTIES

5.1 Pharmacodynamic properties

Mechanism of Action:

The cell walls of bacteria are essential for their normal growth and development. Peptidoglycan is a heteropolymeric component of the cell wall that provides rigid mechanical stability by virtue of its highly cross-linked latticework structure. In gram-positive microorganisms, the cell wall is 50 to 100 molecules thick, but it is only 1 or 2 molecules thick in gram-negative bacteria. The peptidoglycan is composed of glycan chains, which are linear strands of two alternating amino sugars (N-acetylglucosamine and N-acetylmuramic acid) that are cross-linked by peptide chains. Cephalexin inhibits the biosynthesis of the peptidoglycan and causes the lysis of bacteria.

Anti-bacterial Activity:

Cephalexin is bactericidal and has antimicrobial activity similar to that of Cephaloridine or Cephalothin against both Gram-positive and Gram-negative organisms, though it is generally less potent. Cephalexin is highly active against *Staphylococcus aureus*, *Streptococcus* spp.; group A streptococci, *Streptococcus pneumoniae*, *Neisseria meningitidis*, and *Neisseria*

gonorrhoeae. Salmonella, shigella, proteus mirabilis, and some strains of Escherichia coli are susceptible to cephalexin at clinically achievable concentrations. Haemophilus influenzae shows varying sensitivity to cephalexin. Enterococci, Bacteroides, Enterobacter, Proteus apart from P.mirabilis, and pseudomonas spp. are resistant to Cephalexin. It is reported to be more active in alkaline than in acid media.

Most strains of enterococci (*Streptococcus faecalis*) and a few strains of staphylococci are resistant to cefalexin. It is not active against most strains of *Enterobacter species*, *Morganella morganii* and *Pr. vulgaris*. It has no activity against *Pseudomonas* or *Herellea species* or *Acinetobacter calcoaeticus*. Penicillin-resistant *Streptococcus pneumoniae* is usually cross-resistant to beta-lactam antibiotics. When tested by in vitro methods, staphylococci exhibit cross resistance between cefalexin and methicillin type antibiotics

5.2 Pharmacokinetic properties

Absorption

Human pharmacology - Cefalexin is acid stable and may be given without regard to meals. It is rapidly absorbed after oral administration from the gastro-intestinal tract and produces peak plasma concentrations about 1 hour after administration. Following doses of 250mg, 500mg and 1g, average peak serum levels of approximately 9, 18 and 32 mg/L respectively were obtained at 1 hour. Measurable levels were present 6 hours after administration.

Cefalexin is almost completely absorbed from the gastro-intestinal tract, and 75-100% is rapidly excreted in active form in the urine. If cefalexin is taken with food there is delayed and slightly reduced absorption and there may be delayed elimination from the plasma.

The half-life is approximately 60 minutes in patients with normal renal function. Haemodialysis and peritoneal dialysis will remove cefalexin from the blood.

The biological half-life has been reported to range from 0.6 to at least 1.2 hours and this increases with reduced renal function. About 10 to 15% of a dose is bound to plasma proteins.

Distribution

Peak blood levels are achieved one hour after administration, and therapeutic levels are maintained for 6-8 hours. About 80% of the active drug is excreted in the urine within 6 hours. No accumulation is seen with dosages above the therapeutic maximum of 4g/day.

The half-life may be increased in neonates due to their renal immaturity, but there is no accumulation when given at up to 50mg/kg/day.

Elimination

Cefalexin is excreted in the urine by glomerular filtration and tubular secretion. Studies showed that over 90% of the drug was excreted unchanged in the urine within 8 hours. During this period peak urine concentrations following the 250mg, 500mg and 1g doses were approximately 1000, 2200 and 5000mg/L respectively.

5.3 Preclinical safety data

The daily oral administration of cefalexin to rats in doses of 250 or 500mg/kg prior to and during pregnancy, or to rats and mice during the period of organogenesis only had no adverse effect on fertility, foetal viability, foetal weight, or litter size.

Cefalexin showed no enhanced toxicity in weanling and newborn rats as compared with adult animals.

The oral LD₅₀ of cefalexin in rats is 5,000mg/kg.

6. PHARMACEUTICAL PARTICULARS

6.1 List of excipient(s)

Lactose BP

Pregelatinised starch BP

Magnesium Stearate BP

6.2 Incompatibilities:

No major incompatibilities have been noted.

6.3 Shelf-life:

24 months

6.4 Special precautions for storage

Store below 30°C. Protect from Light.

6.5 Nature and contents of packing

Blister pack of 20 capsules, such 5 blisters are packed in one carton

6.6 Instructions for use and handling

None

7. MARKETING AUTHORISATION HOLDER

Cadila Pharmaceuticals Limited

1389, Trasad Road, Dholka,

District: Ahmedabad, Gujarat,

INDIA

8. MARKETING AUTHORISATION NUMBER(S)

07901/09980/NMR/2022

9. DATE OF FIRST AUTHORISATION/RENEWAL OF THE AUTHORISATION

23 Jan. 2023

10. DATE OF REVISION OF THE TEXT

July 2023