SUMMARY OF PRODUCT CHARACTERISTICS

1. NAME OF THE MEDICINAL PRODUCT

NAME OF DRUG PRODUCT: Cefazolin for Injection USP 250 mg.
Cefazolin for injection USP 500 mg.
Cefazolin for Injection USP 1000 mg.

(TRADE) NAME OF PRODUCT: FAZLIN 250
FAZLIN 500
FAZLIN 1000

STRENGTH: 250 mg, 500 mg and 1000 mg.

PHARMACEUTICAL DOSAGE FORM: Injection

2. QUAUTATIVE AND QUANTITATIVE COMPOSITION:

Cefazolin for injection USP 250mg:

Each vial contains Cefazolin Sodium USP equivalent to Cefazolin 250 mg.

Cefazolin for Injection USP 500mg:

Each vial contains Cefazolin Sodium USP equivalent to Cefazolin 500 mg.

Cefazolin for Injection USP 1000 mg:

Each vial contains Cefazolin Sodium USP equivalent to Cefazolin 1000 mg.

3. PHARMACEUTICAL FORM: White to off –white crystalline powder.

4. CLINICAL PARTICULARS

4.1 Therapeutic Indications

Cefazolin is indicated in the treatment of the following serious Infections due to susceptible organisms:

Respiratory Tract Infection: Due to S. *pneumoniae, Klebsiella* sp, *H. influenzae, staph.* aureus (including penicillinase producing strains) and Group A β haemolytic streptococci. Injectable penicillin G benzathine is considered t0 be the medicine of choice in the treatment and prevention of streptococcal Infections, Including the prophylaxis of rheumatic fever.

Cefazolin is effective in the eradication of streptococci from the nasopharynx.

Genitourinary Tract Infections: Due to *E.* coli, P. *mirabilis, Klebsiella sp.* and some strains of *Enterobacter* and *enterococci.*

Skin and Soft-tissue Infections: Due to *Staph. Aureus* (including penicillinase-producing strains) and Group A *Beta*-haemolytic streptococci and other strains of streptococci.

Biliary Tract infections: Due to E. *coli,* various strains of *streptococci,* P. *mirabilis, Klebsiella* sp. and *Staph. Aureus*

Bone and joint Infections: Due to *staph. aureus.*

Septicaemia: Due to S. *pneumoniae, Staph.* aureus (penicillin-susceptible and penicillin-resistant). *P. mirabilis, E. coli,* and *Klebsiella sp.*

Endocarditis: Due to *Staph.* aureus (penicillin susceptible and penicillin-resistant) and Group A β- haemolytic streptococci.

Perioperative Prophylaxis:

The prophylactic administration of Cefazolin preoperatively, intraoperatively and postoperatively may reduce the Incidence of certain post-operative infections in patients undergoing surgical procedures that are classified as contaminated or potentially contaminated
(e.g vaginal hysterectomy. or cholecystectomy in high risk patients, such as those over 70 years of age who have acute cholecystitis, obstructive Jaundice or common bile-duct stones).

The perioperative use of Cefazolin may also be effective in surgical patients in whom infection at the operative site would present a serious risk (e.g. during open-heart surgery and prosthetic arthroplasty).

The prophylactic administration of Cefazolin should usually be discontinued within a 24 hour period after the surgical procedure. For surgery in which the occurrence of infection may be particularly devastating (e.g. open heart surgery and prosthetic arthroplasty), the prophylactic administration of Cefazolin may be continued for 3 to 5 days following the completion of surgery. If there are signs of infection, specimens for cultures should be obtained for the identification of the causative organism so that appropriate therapy may be instituted.

4.2 Posology and method of administration

Cefazolin may be administered intramuscularly or intravenously after reconstitution. Total daily dosages are the same for either route of administration.

Usual Adult Dosage:

Type of Infection	Dose	Frequency
Pneumococcal pneumonia	500mg	Every 6 to 8hrs
Mild infections caused by susceptible gram-positive cocci	250 mg	Every 8 hrs
Acute uncomplicated urinary tract infections	1 g	Every12hrs
Moderate to severe Infections	500mg-1g	Every 12 hrs
Severe, life threatening infections (e.g. endocarditis and Septicaemia)	Ig-1.5g	Every 6hrs

*In rare instances, doses up to 12g of Cefazolin per can be used.

Peri-operative prophylactic use: To prevent post operative infection in contaminated or potentially contaminating surgery, recommended doses are:

1 gm IV or IM administered V1/2 hr to l hr prior to the start of surgery. For lengthy operative procedures (e.g. 2 hrs or more), 500 mg to 1 gm IV or IM during surgery (Administration modified depending on the duration of the operative procedure).

500 mg to 1 gm IV or IM every 6 to 8 hours post operatively. It is important that the pre-operative dose be given just (1/2 to 1 hr.). Prior to the start of surgery so that adequate antibiotic levels are present in the serum and tissues at the time of initial surgical incision.

Cefazolin can be administered, if necessary, at appropriate intervals during surgery to provide sufficient levels of the antibiotic at the anticipated moments of greatest exposure to infective organisms.

In surgery, where the occurrence of infection may be particularly devastating *(e* g. open heart surgery and prosthetic arthroplasty), the prophylactic administration of Cefazolin may be continued for 3 to 5 days following the completion of surgery.

Dosage Adjustment for patients with Reduced Renal function:

Cefazolin may be used in patients with reduced renal function with the following dosage adjustments; patients with a creatinine clearance of 55 ml/min or greater or a serum creatinine of 1.5 mg% or less can be given full doses. Patients with creatinine clearance rates of 35 to 54 mL/min or serum creatinine of 1.6 to 3.0 mg% can also be given full doses, but dosage should be restricted to at least 8 hour intervals. Patient with creatinine clearance rates of 11 to 34 mL/min or serum

creatinine of 3.1 to 4.5 mg% should be given 1/2 the usual dose every 18 to 24 hours. All reduced dosage recommendations apply after an initial loading dose appropriate to the severity of the infection.

Pediatric **dosage:**

In children, a total daily dosage of 25 to 50 rng per Kg (approximately 10 to 20 mg per Pound) of body weight, divided into three or four equal doses, is effective for most mild to moderately severe Infections. Total daily dosage may be increased to 100 mg per Kg (45 mg per Pound) of body weight for severe infections.

Weight	25mg/kg/day Divided into 3 doses		25mg/kg/day Divided into 4 doses	
Kg	Approx. Single dose (mg q8h)	Vol.(mL) needed with dilution of 125mg/mL	Approx. single dose(mg q6h)	Vol (mL) needed With dilution of 125 mg/ ml
4.5	40mg	0.35mL	30mg	0.25 mL
9	75mg	0.6mL	55mg	0.45mL
13.6	115mg	0.9mL	85mg	0.7mL
18.1	150mg	1.2mL	*115 g*	0.9ml
22.7	190 mg	1.5mL	140mg	1.1 ml
Weight	50mg/kg/day Divided into 3 doses		25mg/kg/day Divided into 4 doses	
Kg	Approx. single dose (mg q8h)	Vol. (ml) needed with dilution of 225 mg/ml	Approx. single dose (mg q6h)	Vol.(mL) needed with dilution of 225 mg/ml
4.5	75 mg	0.35 mL	55 mg	0.25 mL
9	150 mg	0.7 mL	110 mg	0.5 mL
13.6	225 mg	1 mL	170 mg	0.75 mL
18.1	300 mg	1.35 mL	225 mg	1 mL
22.7	375 mg	1.7 mL	285 mg	1.25 mL

In children with mild to moderate renal impairment (Creatinine clearance of 70 10 40 mL/min), 60% of the normal daily dose given in divided doses every 12 hours should be sufficient. In children with moderate impairment (creatinine clearance of 70 to 40 ml/min), 60% of the normal daily dose given in divided doses every 12 hours should be sufficient. In children with moderate Impairment (creatinine clearance of 40 to 20 mL/min), 25% of the normal dally dose given in divided doses every 12 hours should be sufficient. In children with severe impairment (creatinine clearance of 20 t0 5 mL/min), 10% of the normal dally dose given every 24 hours should be adequate. All dosage recommendations apply after an Initial loading dose is administered. In premature Infants and in infants under 1 month of age, the use of Cefazolin is not recommended.

4.3 Contraindications

Cefazolin is contraindicated in patients with known allergy to the cephalosporin group of antibiotics.

Special warnings and precautions for use

4.4 Special warnings and precautions for use

Before Cefazolin therapy is instituted, careful inquiry should be made concerning previous hypersensitivity reactions to cephalosporins and penicillin. Cephalosporin c derivatives should be given cautiously to penicillin-sensitive patients.

Serious acute hypersensitivity reactions may require adrenaline and other emergency measures.

Antibiotics, including Cefazolin should be administered cautiously to any patient who has demonstrated some form of allergy, particularly to medicines.

Pseudomembranous colitis occurs with virtually all broad-spectrum antibiotics (including macrolides, semisynthetic penicillins and cephalosporins): therefore, it is important 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. In moderate to severe eases, appropriate measures should be taken.

Precautions

If an allergic reaction to Cefazolin occurs, the medicine should be discontinued and the patient treated with the usual agents (e.g. adrenaline or other pressor amines, Antihistamines or corticosteroids).

Prolonged use of Cefazolin may result in the overgrowth of nonsusceptible organisms. Careful clinical observation of the patient is essential. If superinfection occurs during therapy, appropriate measures should be taken.

When Cefazolin is administered to patients with low urinary output because of impaired renal function, lower daily dosage is required.

Broad spectrum antibiotics should be prescribed with caution in individuals with a history of gastrointestinal disease, particularly colitis.

4.5 Interaction with other medicinal products and other forms of interaction

Used concurrently, probenecid may decrease renal tubular secretion of cephalosporins resulting in increased and more prolonged cephalosporin blood levels.

A false-positive reaction for glucose in the urine may occur with Benedict's solution, Fehling's solution, or CLINITEST Tablets, but not with enzyme-based tests, such as CLINISTIX and TES-TAPE.

Positive direct and indirect antiglobulin (Coombs') occurs; these may also occur in neonates whose mothers received cephalosporins before delivery.

Cefazolin should not be mixed In the syringe with aminoglycoside antibiotics.

4.6 Fertility, pregnancy, and lactation **Pregnancy and lactation**

This medicine should be used during pregnancy only if clearly needed.

Labour and Delivery:

When Cefazolin is administered prior 10 caesarean section, medicine levels in cord blood are approximately one-fourth to one-third of maternal medicine levels. The medicine appears 10 have no adverse effect on the foetus.

Nursing Mothers:

Cefazolin is present in very low concentrations in the milk of nursing mothers. Caution should be exercised when Cefazolin is administered 10 a nursing woman.

4.7 Effects on ability to drive and use machines

None.

4.8 Undesirable effects

Gastrointestinal: Diarrhoea, oral candidiasis (oral thrush), vomiting nausea, stomach cramps, anorexia and pseudomembranous colitis. Onset of pseudomembranous colitis symptoms may occur during or after antibiotic treatment Nausea and vomiting occur rarely.

Allergic: Anaphylaxis, eosinophilia, itching, drug fever, skin rash, Stevens-Johnson syndrome.

Hematologic: Neutropenia, leukopenia, thrombocytopenia, thrombocythemia.

Hepatic and Renal: Transient rise in SGOT, SGPT, BUN and alkaline phosphatase levels occur without renal or hepatic impairment.

Local Reactions: Rarely occurs phlebitis at site of injection. Pain at the site of infection after intramuscular administration occurs infrequently. Some Induration also occurs.

Other Reactions: Genital and anal pruritus (including vulvar pruritus, genital moniliasis and vaginitis).

Overdosage

Signs & Symptoms:

Toxic signs and symptoms following an overdose of Cefazolin may include pain, inflammation, and phlebitis at the injection site. The administration of inappropriately large doses of parenteral cephalo-sporins may cause dizziness, paresthesias, and headaches. Seizures may occur following overdosage with some cephalosporins, particularly in patients with renal impairment in whom accumulation is likely to occur.

Laboratory abnormalities that may occur alter an overdose include elevations in creatinine, BUN, liver enzymes and bilirubin, a positive Coombs' test, thrombocytosis, thrombocytopenia, eosinophilia, leukopenia, and prolongation of the prothrombin time.

Treatment:

In managing overdosage, consider the possibility of multiple medicine overdoses, interaction among medicines, and unusual medicine kinetics in your patient.

If seizures occur, the medicine should be discontinued promptly; anticonvulsant therapy may be administered if clinically indicated. Protect the patient’s airway and support Ventilation and perfusion. Meticulously monitor and maintain, within acceptable limits, the patient's vital signs, blood gases, serum electrolytes. etc. In cases of severe overdosage, especially in a patient with renal failure, combined haemodialysis and haemoperfusion may be considered if response to more conservative therapy fails.

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 Yellow Card Scheme at: www.mhra.gov.uk/yellowcard.

5. PHARMACOLOGICAL PROPERTIES

5.1 Pharmacodynamic properties

Cefazolin is a semisynthetic cephalosporin for intramuscular or intravenous administration. *In vitro* tests demonstrate that the bactericidal action of cephalosporins results from inhibition of cell-wall synthesis. Cefazolin is active against the following organisms *in vitro* and in clinical infections:

Staphylococcus aureus (including penicillinase producing strains), *Staphylococcus epidermidis,*

Methicillin-resistant staphylococci are uniformly resistant to Cefazolin.

Group A β-haemolytic streptococci and other strains of streptococci (many strains of enterococci are resistant) *Streptococcus pneumoniae, Escherichia coli. Klebsiella* sp. *Proteus mirabilis, Haemophilus influenzae, Enterobacter aerogenes.*

Most strains of indole-positive *Proteus (Proteus vulgaris), Enterobacter* cloacae, *Morganella morganii,* and *Providencia rettgeri* are resistant.

Serratia, *Pseudomonas* and *Acinetobacter calcoaceticus* (formerly *Mima* and *Herellea* sp.) are almost uniformly resistant to Cefazolin.

Dilution Techniques:

A bacterial isolate should be considered susceptible if the minimal inhibitory concentration (MIC) for Cefazolin is = 16 mcg/mL. Organisms are considered resistant if the MIC is =64mcg/mL.

5.2 Pharmacokinetic properties

Table 1 demonstrates the blood levels and duration of Cefazolin following Intramuscular administration.

Table 1 - Serum concentrations after Intramuscular administration

Dose	Serum Concentrations (mcg/mL)					
	1/2Hr	1 Hr	2Hr	4Hr	6Hr	8Hr
250 mg	15.5	17	13	5.1	2.5	
500 mg	36.2	36.8	37.9	15.5	6.3	3
19	60.1	63.8	54.3	29.3	13.2	7.1

Table 2 shows the average serum concentrations after IV injection of a single 19 dose: average half-life is 1.4 hours.

Table 2 - Serum concentrations after 1 g intravenous dose.

Serum Concentrations (mcg/mL)					
5 min	15min	30 min	1Hr	2Hr	4Hr
188.4	135.8	106.8	73.7	45.6	16.5

Cefazolin is excreted unchanged in the urine primarily by glomerular filtration and, to a lesser degree, by tubular secretion. Following intramuscular injection of 500 mg, 56% to 89% of the administered dose is recovered within 6 hours, and 80% to nearly 100% in 24 hours.

Cefazolin achieves peak urine concentrations greater than 1000 mcg/mL and 4000 mcg/mL, respectively, following 500 mg and 1 g intramuscular doses.

In patients undergoing peritoneal dialysis (2 L/hr) mean serum levels of Cephazolin were approximately 10 and 30 mcg/mL after 24 hours' instillation of a dialysing solution containing 50 mcg/mL and 150 mcg/mL, respectively. Mean peak levels were 29 mcg/ml (range 13-44 mcg/mL) with 50 mcg/mL, and 72 mcg/mL (range 26-142 mcg/ml) with 150 mcg/mL.

Intraperitoneal administration of Cefazolin is usually well tolerated.

When Cefazolin is administered to patients with unobstructed biliary tracts, high concentrations well above serum levels occur in the gall-bladder tissue and bile. In the presence of obstruction, however, concentration of the antibiotic is considerably lower in bile than the serum.

Cefazolin readily crosses an inflamed synovial membrane, and the concentration of the antibiotic achieved in the joint space is comparable to levels measured in the serum.

Cefazolin readily crosses the placental barrier into the cord blood and amniotic fluid. It is present in very low concentrations in the milk of nursing mothers.

6. PHARMACEUTICALPARTICULARS

6.1 List of excipients

None.

6.2 Incompatibilities

Directions for Use

Cefazolin may be administered intramuscularly or intravenously after reconstitution.

Intramuscular Administration:

Reconstitute as directed by Dilution Table with 0.9% Sodium Chloride Injection or Sterile Water for Injection.

Shake well until dissolved.

Cefazolin should be injected into a large muscle mass.

Pain on injection is infrequent with Cefazolin.

Vial Size	Diluent to be Added	Approx. Average Concentration
250mg	2mL	225mg/mL
500mg	2mL	225mg/mL
1000mg	2.5mL	*330mg/mL*

Intravenous injection.

Administer solution directly into vein or through tubing: Dilute the reconstituted 500 mg or 1 9 of Cefazolin in a minimum of 10 mL of Sterile Water for Injection. Inject solution slowly over a period of 3 10 5 minutes. Do not inject in less than 3 minutes.

6.3 Shelf life

24 months.

6.4 Special precautions for storage

Store below 30°C.

After reconstitution, use within 24 hours when stored at room temperature or use within 10 days when stored In a refrigerator at 2-8 ºC.

6.5 Nature and contents of container

FAZLIN 250, FAZLIN 500 & FAZLIN 1000:

1) A pack of 10vials, 20vials, 30vials & 50vials.

2) One vial with or without Sterile Water for injection.

7. MARKETING AUTHORISATION HOLDER

AUROBINDO

Aurobindo Pharma Ltd.,
Plot No: 2, Maitrivihar,
Ameerpet, Hyderabad-500 038.
Telangana State, India.

8. MARKETING AUTHORIZATION NUMBER

CTD13833

9. DATE/RENEWAL OF REGISTRATION

29/07/2026

10. DATE OF PREPARATION OF THIS LEAFLET

29/07/2026