

ZINNAT SUSPENSION 125 mg

Cefuroxime axetil

QUALITATIVE AND QUANTITATIVE COMPOSITION

ZINNAT SUSPENSION contains granules of cefuroxime axetil for oral suspension. Reconstitution of multidose bottles as directed yields a suspension containing 125 mg cefuroxime (as cefuroxime axetil) in each 5 ml.

Contains sucrose (3,062 g/5 ml dose).

Contains sweetener (aspartame 0,021 g/5 ml).

CLINICAL INFORMATION

Indications

ZINNAT is an oral prodrug of the bactericidal cephalosporin antibiotic cefuroxime, which is resistant to most β (beta)-lactamases and is active against a wide range of Gram-positive and Gram-negative organisms. It is indicated for the treatment of infections caused by susceptible bacteria. Susceptibility to *ZINNAT* will vary with geography and time, and it should be used in accordance with local official antibiotic prescribing guidelines and local susceptibility data (*See Pharmacological properties, Pharmacodynamics*).

Indications include:

- upper respiratory tract infections for example, ear, nose and throat infections, such as otitis media, sinusitis, tonsillitis and pharyngitis
- lower respiratory tract infections for example, pneumonia acute exacerbations of chronic obstructive pulmonary disease
- genito-urinary tract infections for example, pyelonephritis, cystitis and urethritis
- skin and soft tissue infections for example, furunculosis, pyoderma and impetigo
- gonorrhoea, acute uncomplicated gonococcal urethritis and cervicitis
- treatment of early Lyme disease and subsequent prevention of late Lyme disease.

Dosage and Administration

Pharmaceutical Form:

Dry, white to off-white, tutti-frutti flavoured granules for oral suspension.

International Product Information (IPI)

The usual course of therapy is seven days (range 5 to 10 days). The dose of cefuroxime that is selected to treat an individual infection should take into account:

- The expected pathogens and their likely susceptibility to cefuroxime axetil
- The severity and the site of the infection
- The age, weight and renal function of the patient; as shown below.

The duration of therapy should be determined by the type of infection and the response of the patient, and should generally not be longer than recommended.

For optimal absorption, *ZINNAT* should be taken after food.

- **Adults and Children weighing more than 40 kg**

Indication	Dosage
Acute tonsillitis and pharyngitis	250 mg twice daily
Acute otitis media	500 mg twice daily
Acute bacterial sinusitis	500 mg twice daily
Community acquired pneumonia	
Acute exacerbations of chronic obstructive pulmonary disease	
Urinary tract infections	250 mg twice daily
Uncomplicated gonorrhoea	single dose of 1 g
Skin and soft tissue infections	250 mg – 500 mg twice daily
Lyme disease in adults and children over the age of 12 years.	500 mg twice daily for 14 days (range of 10- 21 days)

- **Children**

There are no clinical trial data available on the use of *ZINNAT* in children under the age of 3 months.

Indication	Dosage
Acute tonsillitis and pharyngitis	10 mg/kg twice daily to a maximum of 500 mg daily
Acute otitis media	15 mg/kg twice daily to a maximum of 1000 mg daily
Acute bacterial sinusitis	

International Product Information (IPI)

Community acquired pneumonia	
Urinary tract infections	
Skin and soft tissue infections	
Lyme Disease in children under the age of 12 years	15 mg/kg twice daily to a maximum of 1000 mg daily for 14 days (range of 10 to 21 days)

The following two tables, serve as a guideline for simplified administration from measuring spoons (5 ml) for the 125 mg/5 ml.

10 mg/kg dosage

Age	Weight range (kg)	Dose (mg) twice daily	No. of measuring spoons (5 ml) per dose
3 to 6 months	4 to 6	40 to 60	½
6 months to 2 years	6 to 12	60 to 120	½ to 1
2 to 12 years	12 to 25	120 to 250	1 to 2
	Greater than 25	250	2

15 mg/kg dosage for otitis media, more serious infections and Lyme disease

Age	Weight range (kg)	Dose (mg) twice daily	No. of measuring spoons (5 ml) per dose
3 to 6 months	4 to 6	60 to 90	½
6 months to 2 years	6 to 12	90 to 180	1 to 1½
2 to 12 years	12 to 16	180 to 240	1½ to 2
	16 to 32	240 to 280	2 to 4
	Greater than 32	599	4

International Product Information (IPI)

To enhance compliance and improve the dosing accuracy in very young children, a dosing syringe can be supplied with a multidose bottle containing 50 ml of suspension. However, dosing in spoonfuls should be considered a more favourable option if the child is able to take the medication from the spoon.

If required, the dosing syringe may also be used in older children (please refer to the dosing tables below).

The recommended doses for the paediatric dosing syringe are expressed in ml or mg and according to bodyweight in the following tables:

10 mg/kg/dose (using a paediatric dosing syringe)

Child's weight (kg)	Dose twice daily (mg)	125 mg/5 ml dose twice daily (ml)
4	40	1.6
6	60	2.4
8	80	3.2
10	100	4.0
12	120	4.8
14	140	5.6

15 mg/kg/dose (using a paediatric dosing syringe)

Child's weight (kg)	Dose twice daily (mg)	125 mg/5 ml dose twice daily (ml)
4	60	2.4
6	90	3.6
8	120	4.8
10	150	6.0
12	180	7.2
14	210	8.4

ZINNAT is also available as the sodium salt (*ZINACEF*) for parenteral administration. This permits parenteral therapy with *ZINNAT* to be followed by oral therapy in situations where a change from parenteral to oral treatment is clinically indicated.

International Product Information (IPI)

- **Renal impairment**

Cefuroxime is primarily excreted by the kidneys. In patients with markedly impaired renal function it is recommended that the dosage of cefuroxime be reduced to compensate for its slower excretion (see the table below).

Creatinine Clearance	T_{1/2} (hours)	Recommended Dosage
≥30 ml/min	1.4 - 2.4	No dose adjustment necessary standard dose of 125 mg to 500 mg given twice daily
10-29 ml/min	4.6	Standard individual dose given every 24 hours
<10 ml/min	16.8	Standard individual dose given every 48 hours
During haemodialysis	2 – 4	A single additional standard individual dose should be given at the end of each dialysis

Contraindications

Patients with known hypersensitivity to cephalosporin antibiotics.

Warnings and Precautions

Special care is indicated in patients who have experienced an allergic reaction to penicillins, or other beta-lactams.

As with other antibiotics, use of *ZINNAT* may result in the overgrowth of *Candida*. Prolonged use may also result in the overgrowth of other non-susceptible organisms (e.g. enterococci and *Clostridium difficile*), which may require interruption of treatment.

Pseudomembranous colitis has been reported with the use of antibiotics and may range in severity from mild to life-threatening. Therefore, it is important to consider its diagnosis in patients who develop diarrhoea during or after antibiotic use. If prolonged or significant diarrhoea occurs or the patient experiences abdominal cramps, treatment should be discontinued immediately and the patient investigated further.

The sucrose content of *ZINNAT SUSPENSION* (see *List of Excipients*) should be taken into account when treating diabetic patients, and appropriate advice provided.

The Jarisch-Herxheimer reaction has been seen following *ZINNAT* treatment of Lyme disease. It results directly from the bactericidal activity of *ZINNAT* on the causative organism of Lyme disease, the spirochaete *Borrelia burgdorferi*. Patients should be reassured that this is a common and usually self-limiting consequence of antibiotic treatment of Lyme disease.

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ZINNAT SUSPENSION contains aspartame, which is a source of phenylalanine and so should be used with caution in patients with phenylketonuria.

Interactions

Drugs which reduce gastric acidity may result in a lower bioavailability of cefuroxime compared with that of the fasting state and tend to cancel the effect of enhanced absorption after food.

In common with other antibiotics, *ZINNAT* may affect the gut flora, leading to lower oestrogen reabsorption and reduced efficacy of combined oral contraceptives.

As a false negative result may occur in the ferricyanide test, it is recommended that either the glucose oxidase or hexokinase methods are used to determine blood/plasma glucose levels in patients receiving *ZINNAT*. This antibiotic does not interfere in the alkaline picrate assay for creatinine.

Pregnancy and Lactation

Pregnancy

There is no experimental evidence of embryopathic or teratogenic effects attributable to *ZINNAT* but, as with all drugs, it should be administered with caution during the early months of pregnancy.

Lactation

ZINNAT is excreted in human milk, and consequently caution should be exercised when *ZINNAT* is administered to a nursing mother.

Effects on Ability to Drive and Use Machines

As this medicine may cause dizziness, patients should be warned to be cautious when driving or operating machinery.

Adverse Reactions

Adverse drug reactions to *ZINNAT* are generally mild and transient in nature.

The frequency categories assigned to the adverse reactions below are estimates, as for most reactions suitable data (for example from placebo-controlled studies) for calculating incidence were not available. In addition, the incidence of adverse reactions associated with *ZINNAT* may vary according to the indication.

International Product Information (IPI)

Data from large clinical studies were used to determine the frequency of very common to rare undesirable effects. The frequencies assigned to all other undesirable effects (i.e. those occurring at <1/1000) were mainly determined using post-marketing data and refer to a reporting rate rather than true frequency. Placebo-controlled trial data were not available. Where incidences have been calculated from clinical trial data, these were based on drug-related (investigator assessed) data.

The following convention has been used for the classification of frequency:

very common $\geq 1/10$
common $\geq 1/100$ to $< 1/10$
uncommon $\geq 1/1000$ to $< 1/100$
rare $\geq 1/10,000$ to $< 1/1000$
very rare $< 1/10,000$

Infections and infestations

Common: Overgrowth of Candida

Blood and lymphatic system disorders

Common: Eosinophilia

Uncommon: Positive Coombs' test, thrombocytopenia, leucopenia (sometimes profound)

Very rare: Haemolytic anaemia

Cephalosporins as a class tend to be absorbed onto the surface of red cells membranes and react with antibodies directed against the drug to produce a positive Coombs' test (which can interfere with cross-matching of blood) and very rarely haemolytic anaemia.

Immune system disorders

Hypersensitivity reactions including:

Uncommon: Skin rashes

Rare: Urticaria, pruritus

Very rare: Drug fever, serum sickness, anaphylaxis

Nervous system disorders

Common: Headache, dizziness

Gastrointestinal disorders

Common: Gastrointestinal disturbances including diarrhoea, nausea, abdominal pain

Uncommon: Vomiting

International Product Information (IPI)

Rare: Pseudomembranous colitis (*See Warnings and Precautions*)

Hepatobiliary disorders

Common: Transient increases of hepatic enzyme levels, [ALT (SGPT), AST (SGOT), LDH]

Very rare: Jaundice (predominantly cholestatic), hepatitis

Skin and subcutaneous tissue disorders

Very rare: Erythema multiforme, Stevens-Johnson syndrome, toxic epidermal necrolysis (exanthematic necrolysis)

See also Immune system disorders.

Overdose

Signs and symptoms

Overdosage of cephalosporins can cause cerebral irritation leading to convulsions.

Treatment

Serum levels of cefuroxime can be reduced by haemodialysis and peritoneal dialysis.

PHARMACOLOGICAL PROPERTIES

Pharmacodynamics

The prevalence of acquired resistance is geographically and time dependent and for select species may be very high. Local information on resistance is desirable, particularly when treating severe infections.

<i>In vitro</i> susceptibility of micro-organisms to Cefuroxime
Where clinical efficacy of cefuroxime axetil has been demonstrated in clinical trials this is indicated with an asterisk (*).
Commonly Susceptible Species
<u>Gram-Positive Aerobes:</u> <i>Staphylococcus aureus</i> (methicillin susceptible)* <i>Coagulase negative staphylococcus</i> (methicillin susceptible) <i>Streptococcus pyogenes</i> * Beta-hemolytic streptococci

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<p><u>Gram-Negative Aerobes:</u> <i>Haemophilus influenzae</i>* including ampicillin resistant strains <i>Haemophilus parainfluenzae</i>* <i>Moraxella catarrhalis</i>* <i>Neisseria gonorrhoea</i>* including penicillinase and non-penicillinase producing strains</p>
<p><u>Gram-Positive Anaerobes:</u> <i>Peptostreptococcus</i> spp. <i>Propionibacterium</i> spp.</p>
<p><u>Spirochetes:</u> <i>Borrelia burgdorferi</i>*</p>
<p>Organisms for which acquired resistance may be a problem</p>
<p><u>Gram-Positive Aerobes:</u> <i>Streptococcus pneumoniae</i>*</p>
<p><u>Gram-Negative Aerobes:</u> <i>Citrobacter</i> spp. not including <i>C. freundii</i> <i>Enterobacter</i> spp. not including <i>E. aerogenes</i> and <i>E. cloacae</i> <i>Escherichia coli</i>* <i>Klebsiella</i> spp. including <i>Klebsiella pneumoniae</i>* <i>Proteus mirabilis</i> <i>Proteus</i> spp. not including <i>P. penneri</i> and <i>P. vulgaris</i> <i>Providencia</i> spp.</p>
<p><u>Gram-Positive Anaerobes:</u> <i>Clostridium</i> spp.</p>
<p><u>Gram-Negative Anaerobes:</u> <i>Bacteroides</i> spp. not including <i>B. fragilis</i> <i>Fusobacterium</i> spp.</p>
<p>Inherently resistant organisms</p>
<p><u>Gram-Positive Aerobes:</u> <i>Enterococcus</i> spp. including <i>E. faecalis</i> and <i>E. faecium</i> <i>Listeria monocytogenes</i></p>
<p><u>Gram-Negative Aerobes:</u> <i>Acinetobacter</i> spp. <i>Burkholderia cepacia</i></p>

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<i>Campylobacter</i> spp. <i>Citrobacter freundii</i> <i>Enterobacter aerogenes</i> <i>Enterobacter cloacae</i> <i>Morganella morganii</i> <i>Proteus penneri</i> <i>Proteus vulgaris</i> <i>Pseudomonas</i> spp. including <i>Pseudomonas aeruginosa</i> <i>Serratia</i> spp. <i>Stenotrophomonas maltophilia</i>
<u>Gram-Positive Anaerobes:</u> <i>Clostridioides difficile</i>
<u>Gram-Negative Anaerobes:</u> <i>Bacteroides fragilis</i>
<u>Others:</u> <i>Chlamydia</i> species <i>Mycoplasma</i> species <i>Legionella</i> species

Pharmacokinetics

Absorption

After oral administration, *ZINNAT* is absorbed from the gastrointestinal tract and rapidly hydrolysed in the intestinal mucosa and blood to release cefuroxime into the circulation.

Absorption of cefuroxime is enhanced in the presence of food.

Following administration of *ZINNAT* tablets peak serum levels (2.1 mg/l for a 125 mg dose, 4.1 mg/l for a 250 mg dose, 7.0 mg/l for a 500 mg dose and 13.6 mg/l for a 1 g dose) occur approximately 2 to 3 hours after dosing when taken with food.

The rate of absorption of cefuroxime from the suspension compared with the tablets is reduced, leading to later, lower peak serum levels and reduced systemic bioavailability (4-17% less).

Distribution

Protein binding has been variously stated as 33-50% depending on the methodology used.

Metabolism

Cefuroxime is not metabolised.

Elimination

The serum half life is between 1 and 1.5 hours.

Cefuroxime is excreted by glomerular filtration and tubular secretion. Concurrent administration of probenecid increases the area under the mean serum concentrations time curve by 50%.

Renal impairment:

Cefuroxime pharmacokinetics have been investigated in patients with various degrees of renal impairment. Cefuroxime elimination half-life increases with decrease in renal function which serves as the basis for dosage adjustment recommendations in this group of patients (*See Dosage and Administration*). In patients undergoing haemodialysis, at least 60% of the total amount of cefuroxime present in the body at the start of dialysis will be removed during a 4-hour dialysis period. Therefore, an additional single dose of cefuroxime should be administered following the completion of haemodialysis.

Non-Clinical Information

Animal toxicity studies indicated that cefuroxime is of low toxicity with no significant findings.

PHARMACEUTICAL INFORMATION

List of Excipients

Aspartame (*See Warnings and Precautions*)

Xanthan gum

Acesulfame potassium

Povidone K30

Stearic acid

Sucrose

Tutti-frutti flavour

Shelf-Life

The expiry date of the granules is indicated on the packaging.

The reconstituted suspension when refrigerated between 2 and 8°C can be kept for up to 10 days, (*See Use and Handling*).

Storage

The granules (unconstituted suspension) must be stored below 30 °C.

The storage conditions are detailed on the packaging.

The reconstituted suspension must be refrigerated immediately at between 2 and 8°C.

Keep out of reach of children.

Nature and Contents of Container

Multidose bottle:

ZINNAT SUSPENSION is supplied in PhEur Type III amber glass bottles of 50 ml and 100 ml with an induction heat seal membrane containing 125 mg/5 ml product. A 5 ml dosing spoon and measuring cup are provided in the carton.

Not all presentations are available in every country.

Incompatibilities

In the absence of compatibility studies cefuroxime axetil must not be mixed with other medicinal products.

Use and Handling

- **Reconstitution/Administration Instructions**
- Please note that the time taken to prepare ZINNAT suspension before administration of the first dose will take more than one hour. This includes time for the suspension to "settle" in the refrigerator.

International Product Information (IPI)

Directions for reconstituting suspension in multidose bottles:



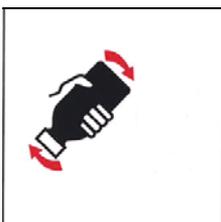
Shake the bottle to loosen the content. All the granules should be free-flowing in the bottle. Remove the cap and the heat-seal membrane. If the latter is damaged or not present, return the product to the pharmacist.



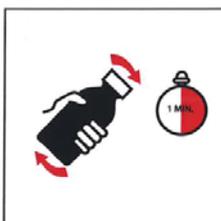
Add an amount of cold water up to the volume line on the measuring cup provided. If the water was previously boiled it must be allowed to cool to room temperature before adding. Do not mix *ZINNAT* oral suspension with hot or warm liquids. Cold water must be used to prevent the suspension becoming too thick.



Pour the total amount of cold water into the bottle. Replace the bottle cap. Allow the bottle to stand to allow the water to fully soak through the granules; this should take about one-minute



Invert the bottle and shake well (for at least 15 seconds) until all the granules have mixed with the water.



Turn the bottle into an upright position and shake well for at least one-minute until all the granules have blended with the water.

- Store the suspension in the refrigerator immediately at between 2 and 8°C (do not freeze) and let it rest for at least one hour before taking the first dose. The reconstituted suspension should be refrigerated at all times; when refrigerated between 2 and 8°C, the reconstituted suspension can be kept for up to 10 days.
- Always shake the bottle well before taking the medication. A spoon is provided for the administration of each dose.
- If desired, *ZINNAT* from multidose bottles can be further diluted in cold fruit juices, or cold milk drinks and should be taken immediately after mixing.

International Product Information (IPI)

Name and address of the holder of the certificate of registration

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Bryanston, 2021

South Africa

Manufacturer

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Registration details

Botswana:

ZINNAT SUSPENSION 125 mg: Reg. No. BOT0200518 S2

Malawi:

ZINNAT SUSPENSION 125 mg: Reg. No. PMPB/PL270/67 POM

Namibia:

ZINNAT SUSPENSION 125 mg: Reg. No. 04/20.1.1/0915 NS2

Zambia:

ZINNAT SUSPENSION 125 mg: Reg. No. 179/013 POM

Zimbabwe:

ZINNAT SUSPENSION 125 mg: Reg. No. 92/7.2.2/2576 PP

International Product Information (IPI)

Version number: GDS29, 30/ IPI09, 10

Date of issue: 14th April 2020/09th October 2020

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