1.3.1 SUMMARY OF PRODUCT CHAREACTERISTIC

1. Name of the medicinal product:

A. Product Name: ROXIRITE (Cefuroxime Axetil Tablets BP 250mg)

B. Strength & pharmaceutical dosage form: 250mg & Solid film coated tablet.

2. Qualitative and quantitative composition:

Each film-coated tablet contains 250 mg of Cefuroxime.

Sr. No.	Name of ingredients with specification	Qty. required for std. batch size(kg)	Total Qty. required (kg)	Label claim mg/Tab	Actual qty. mg/Tab
1	Maize Starch BP	36.764	36.764	-	182
2	MCCP BP	55.146	55.146	-	273
3	Sodium Benzoate BP	0.202	0.202	-	1
4	Maize Starch BP	4.848	4.848	-	24
5	Colloidal Silicon Dioxide BP	0.202	0.202	-	1
6	Cefuroxime Axetil B.P. eq. to Cefuroxime	62.620	62.620	250	310
7	Talcum BP	1.616	1.616	-	8
8	Mg. Sterate BP	0.808	0.808	-	4
9	Cross Carmellose Sod. BP	2.020	2.020	-	10
10	MCCP BP	1.616	1.616	-	8
11	Indion 234	3.030	3.030	-	15
12	HPC LH-21	14.140	14.140	-	70
13	Maize Starch LOD	4.646	4.646	-	23
Without lubrication weight			**187.66**	**-**	**929.0**
14	Colloidal Silicon Dioxide BP	0.202	-	-	1
15	Light Liquid Paraffin	6.060	-	-	30
With lubrication weight			**187.86**	**-**	**930.0**

Coating & polishing material requisition

Sr. No.	Name of coating material with specification	Qty. required (Mg/ml)/Tab	Qty. Issued (Mg/ml)	Qty. Issued
1	Iso propyl alcohol BP	0.189	38.178	38.178
2	MDC BP	0.284	57.368	57.368
3	EL-MB-1004 (F/C Moisture Prote)	28.00	5.636	5.636

3. Pharmaceutical form:

Film-coated tablet

ROXIRITE (Cefuroxime Axetil Tablets BP 250mg) Film-Coated Tablets White, biconvex, oblong tablets scored on one sides.

4. Clinical particulars:

A. Therapeutic indications:

Cefuroxime Axetil is a second generation semi-synthetic cephalosporin and a beta-lactam antibiotic with bactericidal activity. Cefuroxime's effect is dependent on its binding to penicillin-binding proteins (PBPs) located in the bacterial cytoplasmic membrane. Binding results in the inhibition of the Trans peptidase enzymes, thereby preventing cross-linking of the pent glycine bridge with the fourth residue of the pent peptide and interrupting consequent synthesis of peptidoglycan chains. As a result, cefuroxime inhibits bacterial septum and cell wall synthesis formation.

Cefuroxime is indicated for the treatment of a variety of infections including acute bacterial otitis media, several upper respiratory tract infections, skin infections, urinary tract infections, gonorrhoea, early Lyme disease, and impetigo.

- Acute streptococcal tonsillitis and pharyngitis.
- Acute bacterial sinusitis.
- Acute otitis media.
- Acute exacerbations of chronic bronchitis.
- Cystitis
- Pyelonephritis.
- Uncomplicated skin and soft tissue infections.
- Treatment of early Lyme disease.

B. Posology and method of administration:

Posology:

The usual course of therapy is seven days (may range from five to ten days).

Table 1. Adults and children (≥ 40 kg)

Indication	Dosage
Acute tonsillitis and pharyngitis, acute bacterial sinusitis	250 mg twice daily
Acute otitis media	500 mg twice daily
Acute exacerbations of chronic bronchitis	500 mg twice daily
Cystitis	250 mg twice daily
Pyelonephritis	250 mg twice daily
Uncomplicated skin and soft tissue infections	250 mg twice daily
Lyme disease	500 mg twice daily for 14 days (range of 10 to 21 days)

Table 2. Children (<40 kg)

Indication	Dosage
Acute tonsillitis and pharyngitis, acute bacterial sinusitis	10 mg/kg twice daily to a maximum of 125 mg twice daily
Children aged two years or older with otitis media or, where appropriate, with more severe infections	15 mg/kg twice daily to a maximum of 250 mg twice daily
Cystitis	15 mg/kg twice daily to a maximum of 250 mg twice daily
Pyelonephritis	15 mg/kg twice daily to a maximum of 250 mg twice daily for 10 to 14 days
Uncomplicated skin and soft tissue infections	15 mg/kg twice daily to a maximum of 250 mg twice daily
Lyme disease	15 mg/kg twice daily to a maximum of 250 mg twice daily for 14 days (10 to 21 days)

Renal impairment

The safety and efficacy of cefuroxime axetil in patients with renal failure have not been established.

Cefuroxime is primarily excreted by the kidneys. In patients with markedly impaired renal function it is recommended that the dosage of cefuroxime should be reduced to compensate for its slower excretion. Cefuroxime is effectively removed by dialysis.

Table 3. Recommended doses for Cefuroxime axetil in renal impairment

Creatinine clearance	$T_{1/2}$ (hrs.)	Recommended dosage
≥ 30 mL/min/1.73 m^2	1.4– 2.4	no dose adjustment necessary (standard dose of 125 mg to 500 mg given twice daily)
10-29 mL/min/1.73 m^2	4.6	standard individual dose given every 24 hours
<10 mL/min/1.73 m^2	16.8	standard individual dose given every 48 hours
Patients on haemodialysis	2– 4	a further standard individual dose should be given at the end of each dialysis

Method of administration

Oral use- Cefuroxime axetil tablets should be taken after food for optimum absorption.

Cefuroxime axetil tablets should not be crushed and are therefore unsuitable for treatment of patients who cannot swallow tablets.

In children Cefuroxime axetil oral suspension may be used.

C. Contraindications:

Hypersensitivity to the active substance.

Patients with known hypersensitivity to cephalosporin antibiotics.

History of severe hypersensitivity (e.g. anaphylactic reaction) to any other type of beta lactam antibacterial agent (penicillins, monobactams and carbapenems).

D. Special warnings and precautions for use:

Hypersensitivity reactions

Special care is indicated in patients who have experienced an allergic reaction to penicillins or other beta-lactam antibiotics because there is a risk of cross-sensitivity. As with all beta-lactam antibacterial agents, serious and occasionally fatal hypersensitivity reactions have been reported. There have been reports of hypersensitivity reactions which progressed to Kounis.

Before beginning treatment, it should be established whether the patient has a history of severe hypersensitivity reactions to cefuroxime, to other cephalosporins or to any other type of beta-lactam agent. Caution should be used if cefuroxime is given to patients with a history of non-severe hypersensitivity to other beta-lactam agents.

Severe cutaneous adverse reactions (SCARS)

Severe cutaneous adverse reactions including: Stevens-Johnson syndrome, toxic epidermal necrosis and drug reaction with eosinophilia and systemic symptoms, which can be life-threatening or fatal, have been reported in association with cefuroxime 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, cefuroxime should be withdrawn immediately and an alternative treatment considered. If the patient has developed a serious reaction such as SJS, TEN or DRESS with the use of cefuroxime, treatment with cefuroxime must not be restarted in this patient at any time.

Jarisch-Herxheimer reaction

The Jarisch-Herxheimer reaction has been seen following cefuroxime axetil treatment of Lyme disease. It results directly from the bactericidal activity of cefuroxime axetil on the causative bacteria 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.

Overgrowth of non-susceptible microorganisms

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

Antibacterial agent– associated pseudomembranous colitis have been reported with nearly all antibacterial agents, including cefuroxime and may range in severity from mild to life threatening. This diagnosis should be considered in patients with diarrhoea during or subsequent to the administration of cefuroxime. Discontinuation of therapy with cefuroxime and the administration of specific treatment for Clostridium difficile should be considered. Medicinal products that inhibit peristalsis should not be given.

E. Interaction with other medicinal products and other forms of interaction:

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

Cefuroxime is excreted by glomerular filtration and tubular secretion. Concomitant use of probenecid is not recommended. Concurrent administration of probenecid significantly increases the peak concentration, area under the serum concentration time curve and elimination half-life of cefuroxime.

Concomitant use with oral anticoagulants may give rise to increased INR.

F. Fertility, pregnancy and lactation:

Pregnancy:

Studies in animals have shown no harmful effects on pregnancy, embryonal or foetal development, parturition or postnatal development. Cefuroxime axetil should be prescribed to pregnant women only if the benefit outweighs the risk.

Lactation:

Cefuroxime is excreted in human milk in small quantities. Adverse effects at therapeutic doses are not expected, although a risk of diarrhoea and fungus infection of the mucous membranes cannot be excluded. Breastfeeding might have to be discontinued due to these effects. The possibility of sensitisation should be taken into account. Cefuroxime should only be used during breastfeeding after benefit/risk assessment by the physician in charge.

Fertility:

There are no data on the effects of cefuroxime axetil on fertility in humans. Reproductive studies in animals have shown no effects on fertility.

G. Undesirable effects:

Treatment related adverse reactions, all grades, are listed below by MedDRA body system organ class, frequency and grade of severity. The following convention has been utilised for the classification of frequency: very common ≥ 1/10; common ≥ 1/100 to < 1/10, uncommon ≥ 1/1,000 to < 1/100; rare ≥ 1/10,000 to < 1/1,000; very rare < 1/10,000.

System organ class	Common	Uncommon	Not known
Infections and infestations	Candida overgrowth	-	Clostridium difficile overgrowth
Blood and lymphatic system disorders	eosinophilia	positive Coombs' test, thrombocytopenia, leukopenia (sometimes profound)	Haemolytic anaemia
Immune system disorders	-	-	Drug fever, serum sickness, anaphylaxis, Jarisch-Herxheimer reaction
Cardiac disorders	-	-	Kounis syndrome
Nervous system disorders	headache, dizziness	-	
Gastrointestinal disorders	diarrhoea, nausea, abdominal pain	vomiting	Pseudomembranous colitis
Hepatobiliary disorders	transient increases of hepatic enzyme levels	-	jaundice (predominantly cholestasis), Hepatitis
Skin and subcutaneous tissue disorders	-	skin rashes	Urticaria, pruritus, severe cutaneous adverse reactions (SCARs), including erythema multiforme (EM), Stevens-Johnson syndrome (SJS), toxic epidermal necrolysis (exanthematic necrolysis) (TEN) , drug reaction with eosinophilia and systemic symptoms (DRESS), and angioneurotic oedema

H. Overdose:

Overdose can lead to neurological sequelae including encephalopathy, convulsions and coma. Symptoms of overdose can occur if the dose is not reduced appropriately in patients with renal impairment.

5. Pharmacological properties:

A. Pharmacodynamic properties:

Pharmacotherapeutic group: Antibacterial for systemic use, second-generation cephalosporins
ATC-Code: J01DC02

Mechanism of Action:

Cefuroxime axetil undergoes hydrolysis by esterase enzymes to the active antibiotic, cefuroxime.

Cefuroxime inhibits bacterial cell wall synthesis following attachment to penicillin binding proteins (PBPs). This results in the interruption of cell wall (peptidoglycan) biosynthesis, which leads to bacterial cell lysis and death.

Mechanism of resistance

Bacterial resistance to cefuroxime may be due to one or more of the following mechanisms:

Hydrolysis by beta-lactamases; including (but not limited to) by extended-spectrum beta-lactamases (ESBLs), and AmpC enzymes that may be induced or stably depressed in certain aerobic Gram-negative bacteria species;

Reduced affinity of penicillin-binding proteins for cefuroxime;

Outer membrane impermeability, which restricts access of cefuroxime to penicillin binding proteins in Gram-negative bacteria.

B. Pharmacokinetic properties:

Absorption

After oral administration cefuroxime axetil is absorbed from the gastrointestinal tract and rapidly hydrolysed in the intestinal mucosa and blood to release cefuroxime into the circulation. Optimum absorption occurs when it is administered shortly after a meal.

Following administration of cefuroxime axetil tablets peak serum levels (2.9 µ g/mL for a 125 mg dose, 4.4 µ g/mL for a 250 mg dose, 7.7 µ g/mL for a 500 mg dose and 13.6 µ g/mL for a 1000 mg dose) occur approximately 2.4 hours after dosing when taken with food. The pharmacokinetics of cefuroxime is linear over the oral dosage range of 125 to 1000 mg.

Distribution

Protein binding has been stated as 33 to 50% depending on the methodology used. Following a single dose of cefuroxime axetil 500 mg tablet to 12 healthy volunteers, the apparent volume of distribution was 50 L (CV%=28%). Concentrations of cefuroxime in excess of the minimum inhibitory levels for common pathogens can be achieved in the tonsils, sinus tissues, bronchial mucosa, bone, pleural fluid, joint fluid, synovial fluid, interstitial fluid, bile, sputum and aqueous humour. Cefuroxime passes the blood-brain barrier when the meninges are inflamed.

Biotransformation

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. The renal clearance is in the region of 125 to 148 mL/min/1.73 m^2.

Special patient populations

Elderly

No special precaution is necessary in the elderly patients with normal renal function at dosages up to the normal maximum of 1 g per day. Elderly patients are more likely to have decreased renal function; therefore, the dose should be adjusted in accordance with the renal function in the elderly.

Paediatric population

In older infants (aged >3 months) and in children, the pharmacokinetics of cefuroxime are similar to that observed in adults.

There is no clinical trial data available on the use of cefuroxime axetil in children under the age of 3 months.

Renal impairment

Cefuroxime is primarily excreted by the kidneys. Therefore, as with all such antibiotics, in patients with markedly impaired renal function (i.e. C1cr <30 mL/minute) it is recommended that the dosage of cefuroxime should be reduced to compensate for its slower excretion.

Cefuroxime is effectively removed by dialysis.

Hepatic impairment

There are no data available for patients with hepatic impairment. Since cefuroxime is primarily eliminated by the kidney, the presence of hepatic dysfunction is expected to have no effect on the pharmacokinetics of cefuroxime.

PK/PD relationship

For cephalosporins, the most important pharmacokinetic-pharmacodynamics index correlating with in vivo efficacy has been shown to be the percentage of the dosing interval (%T) that the unbound concentration remains above the minimum inhibitory concentration (MIC) of cefuroxime for individual target species.

C. Preclinical safety data:

Non-clinical data reveal no special hazard for humans based on studies of safety pharmacology, repeated dose toxicity, genotoxicity and toxicity to reproduction and development.

6. Pharmaceutical particulars:

A. List of excipients:

Sodium laurylsulfate, copovidone,

Croscarmellose sodium

Magnesium stearate

Colloidal anhydrous silica

Granulated mannitol

Microcrystalline cellulose

Crospovidone

Talc

Hypromellose

Polyethylene glycol

Polysorbate 80

Titanium dioxide

B. Incompatibilities:

Not Applicable

C. Shelf life:

3 years

D. Special precautions for storage:

Al/Al blister: Store in the original packaging in order to protect from moisture

Keep out of reach and sight of children.

Do not store above 25ºC.

This medicinal product does not require any special temperature storage conditions.

E. Nature and contents of container:

10 x1×10 Tablets.

One blister of 10 tablets packed in one Inner Carton,
Such 10 Inner Cartons are packed in one Outer Carton.

F. Special precautions for disposal and other handling:

No special requirements.

7. Marketing authorisation holder:

Savocent pharma ltd. Mushin, Lagos

8. Marketing authorisation number(s): --

C4-0404

9. Date of first authorisation/renewal of the authorisation:

30-01-2020

10. Date of revision of the text: --

10-01-2025