SUMMARY OF PRODUCT CHARACTERISTICS

1. Name of the medicinal product
SANDROX - 500 CAP
Cefadroxil Capsules USP 500mg

2. Qualitative and quantitative composition
Label Claim:
Each hard gelatin capsule contains:
Cefadroxil monohydrate USP equivalent to anhydrous Cefadroxil 500mg

Sr. No	Raw Material	Specification	Qty / capsule (mg)	Function
1	Cefadroxil monohydrate (compacted)*	USP	543.00	Active ingredient

Remarks:
***** The above quantity is based on 98.0% w/w assay and 6.0% w/w water content of Cefadroxil monohydrate

3. Pharmaceutical form
Hard gelatin capsules
Description: Red/yellow coloured hard gelatin capsules of size "0" containing white to off- white granular powder.

4. Clinical Particulars
4.1 Therapeutic indications
Cefadroxil is indicated for the treatment of patients with infection caused by susceptible strains of the designated organisms in the following diseases:
Urinary tract infections caused by *E. coli*, *P. mirabilis*, and *Klebsiella* species.
Skin and skin structure infections caused by staphylococci and/or streptococci.
Pharyngitis and/or tonsillitis caused by *Streptococcus pyogenes* (Group A beta-hemolytic streptococci).
Note: Only penicillin by the intramuscular route of administration has been shown to be effective in the prophylaxis of rheumatic fever. Cefadroxil is generally effective in the eradication of streptococci from the oropharynx. However, data establishing the efficacy of Cefadroxil for the prophylaxis of subsequent rheumatic fever are not available.
Note: Culture and susceptibility tests should be initiated prior to and during therapy. Renal function studies should be performed when indicated.

4.2 Posology and method of administration
Route of administration: Oral.
Cefadroxil is acid-stable and may be administered orally without regard to meals. Administration with food may be helpful in diminishing potential gastrointestinal complaints occasionally associated with oral cephalosporin therapy.
Adults
Urinary Tract Infections: For uncomplicated lower urinary tract infections (i.e., cystitis) the usual dosage is 1 or 2 g per day in a single (q.d.) or divided doses (b.i.d.).
For all other urinary tract infections the usual dosage is 2 g per day in divided doses (b.i.d.).
Skin and Skin Structure Infections: For skin and skin structure infections the usual dosage is 1 g per day in single (q.d.) or divided doses (b.i.d.).
Pharyngitis and Tonsillitis: Treatment of group A beta-hemolytic streptococcal pharyngitis and tonsillitis—1 g per day in single (q.d.) or divided doses (b.i.d.) for 10 days.

Children

For urinary tract infections, the recommended daily dosage for children is 30 mg/kg/day in divided doses every 12 hours. For pharyngitis, tonsillitis, and impetigo, the recommended daily dosage for children is 30 mg/kg/day in a single dose or in equally divided doses every 12 hours, for other skin and skin structure infections, the recommended daily dosage is 30 mg/kg/day in equally divided doses every 12 hours. In the treatment of beta-hemolytic streptococcal infections, a therapeutic dosage of Cefadroxil should be administered for atleast 10 days.

Renal Impairment

In patients with renal impairment, the dosage of cefadroxil should be adjusted according to creatinine clearance rates to prevent drug accumulation. The following schedule is suggested. In adults, the initial dose is 1000 mg of Cefadroxil and the maintenance dose (based on the creatinine clearance rate [mL/min/1.73 M^2]) is 500 mg at the time intervals listed below.

Creatinine Clearances	Dosage Interval
0 to 10 mL/min	36 hours
10 to 25 mL/min	24 hours
25 to 50 mL/min	12 hours

Patients with creatinine clearance rates over 50 mL/min may be treated as if they were patients having normal renal function.

4.3 Contraindications

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

4.4. Special warnings and precautions for use

WARNINGS

Before therapy with Cefadroxil is instituted, careful inquiry should be made to determine whether the patient has had previous hypersensitivity reactions to cefadroxil, cephalosporins, Penicillins, or other drugs. If this product is to be given to Penicillin-sensitive patients, caution should be exercised because cross-sensitivity among beta-lactam antibiotics has been clearly documented and may occur in up to 10% of patients with a history of penicillin allergy.

If an allergic reaction to Cefadroxil occurs, discontinue the drug.

Serious acute hypersensitivity reactions may require treatment with epinephrine and other emergency measures, including oxygen, intravenous fluids, intravenous antihistamines, corticosteroids, pressor amines, and airway management, as clinically indicated.

Pseudomembranous colitis has been reported with nearly all antibacterial agents, including cefadroxil, and may range from mild to life-threatening. Therefore, it is important to consider this diagnosis in patients who present with diarrhea subsequent to the administration of antibacterial agents.

Treatment with antibacterial agents alters the normal flora of the colon and may permit overgrowth of clostridia. Studies indicated that a toxin produced by *Clostridium difficile* is a primary cause of "antibiotic-associated colitis''.

After the diagnosis of pseudomembranous colitis has been established, therapeutic measures should be initiated. Mild cases of pseudomembranous colitis usually respond to discontinuation of the drug alone. In moderate to severe cases, consideration should be given to management with fluids and electrolytes, protein supplementation and treatment with an antibacterial drug effective against *Clostridium difficile*.

PRECAUTIONS

General

Cefadroxil should be used with caution in the presence of markedly impaired renal function (creatinine clearance rate of less than 50 mL/min/1.73 M^2). In patients with known or suspected renal impairment, careful clinical observation and appropriate laboratory studies should be made prior to and during therapy.

Prolonged use of Cefadroxil may result in the overgrowth of nonsusceptible organisms.

Careful observation of the patient is essential. If superinfection occurs during therapy, appropriate measures should be taken.

Cefadroxil should be prescribed with caution in individuals with history of gastrointestinal disease particularly colitis.

4.5 Interaction with other medicinal products and other forms of interaction

Positive direct Coombs' tests have been reported during treatment with the cephalosporin antibiotics. In hematologic 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 recognized that a positive Coombs' test may be due to the drug.

Carcinogenesis, Mutagenesis, and Impairment of Fertility

No long-term studies have been performed to determine carcinogenic potential. No genetic toxicity tests have been performed.

4.6 Pregnancy and lactation

Pregnancy Category B

Reproduction studies have been performed in mice and rats at doses up to 11 times the human dose and have revealed no evidence of impaired fertility or harm to the fetus due to Cefadroxil. There are, however, no adequate and well controlled studies in pregnant women. Because animal reproduction studies are not always predictive of human response, this drug should be used during pregnancy only if clearly needed.

Labor and Delivery

Cefadroxil has not been studied for use during labor and delivery. Treatment should only be given if clearly needed.

Nursing Mothers

Caution should be exercised when Cefadroxil is administered to a nursing mother.

Geriatric Use

Of approximately 650 patients who received Cefadroxil for the treatment of urinary tract infections in three clinical trials, 28% were 60 years and older, while 16% were 70 years and older. Of approximately 1000 patients who received Cefadroxil for the treatment of skin and skin structure infection in 14 clinical trials, 12% were 60 years and older while 4% were 70 years and over. No overall differences in safety were observed between the elderly patients in these studies and younger patients. Clinical studies of Cefadroxil for the treatment for pharyngitis or tonsillitis did not include sufficient numbers of patients 65 years and older to determine whether they respond differently from younger patients. Other reported clinical experience with Cefadroxil has not identified differences in responses between elderly and younger patients, but greater sensitivity of some older individuals cannot be ruled out.

Cefadroxil is substantially excreted by the kidney, and dosage adjustment is indicated for patients with renal impairment. Because elderly patients are more likely to have decreased renal function, care should be taken in dose selection, and it may be useful to monitor renal function.

4.7 Effects on ability to drive and use machines
Cefadroxil may cause headache, dizziness, nervousness, sleeplessness and fatigue, therefore the ability to drive and use machines may be influenced (see section 4.8).

4.8 Undesirable effects
Gastrointestinal
Onset of pseudomembranous colitis symptoms may occur during or after antibiotic treatment. Dyspepsia, nausea and vomiting have been reported rarely. Diarrhea has also occurred.
Hypersensitivity
Allergies (in the form of rash, urticaria, angioedema, and pruritus) have been observed.
These reactions usually subsided upon discontinuation of the drug. Anaphylaxis has also been reported.
Other
Other reactions have included hepatic dysfunction including cholestasis and elevations in serum transaminase, genital pruritus, genital moniliasis, vaginitis, moderate transient neutropenia, fever. Agranulocytosis, thrombocytopenia, idiosyncratic hepatic failure, erythema multiforme, Stevens-Johnson syndrome, serum sickness, and arthralgia have been rarely reported.
In addition to the adverse reactions listed above which have been observed in patients treated with cefadroxil, the following adverse reactions and altered laboratory tests have been reported for cephalosporin-class antibiotics:
Toxic epidermal necrolysis, abdominal pain, superinfection, renal dysfunction, toxic nephropathy, aplastic anemia, hemolytic anemia, hemorrhage, prolonged prothrombin time, positive Coombs' test, increased BUN, increased creatinine, elevated alkaline phosphatase, elevated aspartate aminotransferase (AST), elevated alanine aminotransferase (ALT), elevated bilirubin, elevated LDH, eosinophilia, pancytopenia, neutropenia.
Several cephalosporins have been implicated in triggering seizures, particularly in patients with renal impairment, when the dosage was not reduced. If seizures associated with drug therapy occur, the drug should be discontinued. Anticonvulsant therapy can be given if clinically indicated.

4.9 Overdose
No clinical reports are available on the symptoms of Cefadroxil overdose, however experience with other cephalosporins suggest the following symptoms are possible: nausea, hallucinations, hyperreflexia (such as twitching or muscle spasms), extrapyramidal symptoms (inability to initiate movement or remain motionless), clouded consciousness; rarely coma and renal functional impairment.

5. Pharmacological Properties
ATC classification
ATC-Code: J01DB05
Pharmacotherapeutic group: Other beta-lactam antibacterials. First generation cephalosporins.

5.1 Pharmacodynamic properties
MECHANISM OF ACTION
Inhibits bacterial cell wall synthesis by binding to one or more of the penicillin-binding proteins (PBPs) which in turn inhibits the final transpeptidation step of peptidoglycan synthesis in bacterial cell walls. Bacteria eventually lyse due to ongoing activity of cell

wall autolytic enzymes (autolysins and murein hydrolases) while cell wall assembly is arrested.

SPECTRUM OF ANTIBACTERIAL ACTIVITY

Cefadroxil has been shown to be active against the following organisms both *in vitro* and in clinical infections.

Beta-hemolytic streptococci
Staphylococci, including penicillinase-producing strains
Streptococcus (Diplococcus) pneumoniae
Escherichia coli
Proteus mirabilis
Klebsiella species
Moraxella (Branhamella) catarrhalis

Note: Most strains of *Enterococcus faecalis* (formerly *Streptococcus faecalis*) and *Enterococcus faecium* (formerly *Streptococcus faecium*) are resistant to cefadroxil. It is not active against most strains of *Enterobacter* species, *Morganella morganii* (formerly *Proteus morganii*), and *P. vulgaris*. It has no activity against *Pseudomonas* species and *Acinetobacter calcoaceticus* (formerly *Mima* and *Herella* species).

5.2 Pharmacokinetic properties

Cefadroxil is rapidly absorbed after oral administration. Following single doses of 500 mg and 1000 mg, average peak serum concentrations were approximately 16 and 28 μg/mL, respectively. Measurable levels were present 12 hours after administration. Over 90% of the drug is excreted unchanged in the urine within 24 hours. Peak urine concentrations are approximately 1800 μg/mL during the period following a single 500-mg oral dose. Increases in dosage generally produce a proportionate increase in Cefadroxil, urinary concentration. The urine antibiotic concentration, following a 1-g dose, was maintained well above the MIC of susceptible urinary pathogens for 20 to 22 hours.

5.3 Preclinical safety data

Pre-clinical data reveal no special hazard for humans based on conventional studies of repeated dose toxicity, genotoxicity and toxicity to reproduction.

6. Pharmaceutical particulars

6.1 List of excipients

Lactose anhydrous
Croscarmellose sodium
Magnesium stearate
EHG Capsule Size 0

6.2 Incompatibilities

Not applicable

6.3 Shelf life

36 Months

6.4 Special precautions for storage

Store at temperature below 30°C. Protect from light.

KEEP OUT OF REACH OF CHILDREN

6.5 Nature and contents of container

10 Capsules in an ALU PVC Blister. 10 such blisters are packed with package insert in a carton. (10×10)

6.6 Special precautions for disposal and other handling
No special requirements

7. Marketing Authorisation Holder
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8. Marketing authorisation number

SANCE/IND/767

9. Date of first authorisation/renewal of the authorization

24/07/2019

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30/06/2023