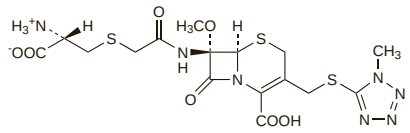
Cefminox Sodium *(pINNM)*

Cefminox sódico; Cefminox Sodique; MT-141; Natrii Cefminoxum. Sodium 7-{2-[(*S*)-2-amino-2-carboxyethyl]thioacetamido}-7-methoxy-3-(1-methyl-1*H*-tetrazol-5-ylthiomethyl)-3-cephem-4-carboxylate.

Натрий Цефминокс

$C_{16}H_{20}N_7NaO_7S_3$ = 541.6.

CAS — 75481-73-1 (cefminox).



(cefminox)

Pharmacopoeias. *Jpn* includes the heptahydrate.

Profile

Cefminox sodium is a cephamycin antibacterial with properties similar to those of cefoxitin (p.230) but with an *N*-methylthiotetrazole side-chain like cefamandole (p.220). It is given intravenously as the sodium salt but doses are expressed in terms of cefminox; 1.04 g of cefminox sodium is equivalent to about 1 g of cefminox. A usual dose is 2 to 4 g daily given in divided doses.

◊ References.

1. Watanabe S, Omoto S. Pharmacology of cefminox, a new bactericidal cephamycin. *Drugs Exp Clin Res* 1990; **16:** 461–7.
2. Soriano F, *et al.* Comparative susceptibility of cefminox and cefoxitin to β-lactamases of Bacteroides spp. *J Antimicrob Chemother* 1991; **28:** 55–60.
3. Aguilar L, *et al.* Cefminox: correlation between in-vitro susceptibility and pharmacokinetics and serum bactericidal activity in healthy volunteers. *J Antimicrob Chemother* 1994; **33:** 91–101.
4. Mayama T, *et al.* Postmarketing surveillance on side-effects of cefminox sodium (Meicelin). *Int J Clin Pharmacol Ther* 1995; **33:** 149–55.
5. Hoellman DB, *et al.* In vitro activities of cefminox against anaerobic bacteria compared with those of nine other compounds. *Antimicrob Agents Chemother* 1998; **42:** 495–501.
6. Torres AJ, *et al.* Cefminox versus metronidazole plus gentamicin in intra-abdominal infections: a prospective randomized controlled clinical trial. *Infection* 2000; **28:** 318–22.

Sodium content. Each g of cefminox sodium contains about 1.84 mmol of sodium.

Preparations

Proprietary Preparations (details are given in Part 3)
Jpn: Meicelin; ***Port.:*** Tencef; ***Spain:*** Tencef; ***Thai.:*** Meicelin.

Cefodizime Sodium *(BANM, rINNM)*

Cefodizima sódica; Céfodizime Sodique; HR-221; Natrii Cefodizimum; S-771221B; Sefodizim Disodyum; THR-221; TRH-221. (*Z*)-7-[2-(2-Aminothiazol-4-yl)-2-methoxyiminoacetamido]-3-(5-carboxymethyl-4-methylthiazol-2-ylthiomethyl)-3-cephem-4-carboxylic acid, disodium salt.

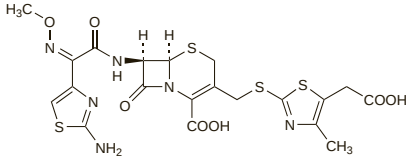
Натрий Цефодизим

$C_{20}H_{18}N_6Na_2O_7S_4$ = 628.6.

CAS — 69739-16-8 (cefodizime); 86329-79-5 (cefodizime sodium).

ATC — J01DD09.

ATC Vet — QJ01DD09.



(cefodizime)

Pharmacopoeias. In *Jpn.*

Adverse Effects and Precautions

As for Cefotaxime, p.228.

Sodium content. Each g of cefodizime sodium contains about 3.2 mmol of sodium.

Interactions

Probenecid reduces the renal clearance of cefodizime.

Antimicrobial Action

Cefodizime has similar antimicrobial activity to that of cefotaxime (p.228) although cefodizime has no active metabolite. It has variable activity against *Citrobacter* spp., and *Pseudomonas aeruginosa* and *Bacteroides fragilis* are generally resistant.

Pharmacokinetics

Cefodizime is given by injection as the sodium salt. Intramuscular injection of 1 g cefodizime produces peak plasma concentrations of about 60 to 75 micrograms/mL at about 1 to 1.5 hours. Immediately after intravenous doses of 1 or 2 g cefodizime mean peak plasma concentrations of 215 and 394 micrograms/mL, respectively, have been achieved. Cefodizime is about 80% bound to plasma proteins and is widely distributed into body tissues and fluids. It crosses the placenta and small amounts have been detected in breast milk. Plasma elimination is reported to be triphasic with a terminal elimination half-life of about 4 hours. The half-life is prolonged by renal impairment.

The majority of a dose is excreted unchanged in the urine; up to 80% of a dose has been recovered within 24 hours. Cefodizime is mainly excreted by glomerular filtration with some tubular secretion. Probenecid delays excretion. Cefodizime is removed by dialysis.

Uses and Administration

Cefodizime is a third-generation cephalosporin antibacterial with uses similar to those of cefotaxime (p.229).

Cefodizime is given as the disodium salt by intramuscular injection or intravenously by injection or infusion in the treatment of susceptible infections. Doses are expressed in terms of the equivalent amount of cefodizime; 1.08 g of cefodizime sodium is equivalent to about 1 g of cefodizime. Adults are usually given 1 to 2 g every 12 or 24 hours for lower respiratory-tract infections and upper and lower urinary-tract infections. Doses up to 4 g daily may be given in severe infection. In women with uncomplicated lower urinary-tract infections a single dose of 1 to 2 g may be sufficient. For gonorrhoea a single dose of 0.25 to 0.5 g may be given. Doses may need to be reduced in patients with renal impairment (see below).

◊ References.

1. Finch RG, *et al.*, eds. Cefodizime: a third generation cephalosporin with immunomodulating properties. *J Antimicrob Chemother* 1990; **26** (suppl C): 1–134.
2. Barradell LB, Brogden RN. Cefodizime: a review of its antibacterial activity, pharmacokinetic properties and therapeutic use. *Drugs* 1992; **44:** 800–834.
3. Thalhammer F, *et al.* Single-dose cefodizime as infection prophylaxis in abdominal surgery: a prospective multicenter study. *Infection* 1998; **26:** 136–8.
4. Matsumoto T, *et al.* Single dose of cefodizime completely eradicated multidrug-resistant strain of Neisseria gonorrhoeae in urethritis and uterine cervicitis. *J Infect Chemother* 2006; **12:** 97–9.
5. Matsumoto T, *et al.* Multiple doses of cefodizime are necessary for the treatment of Neisseria gonorrhoeae pharyngeal infection. *J Infect Chemother* 2006; **12:** 145–7.

Administration in renal impairment. Doses of cefodizime should be reduced in patients with renal impairment according to creatinine clearance (CC):

- CC 10 to 30 mL/minute: 1 to 2 g daily
- CC less than 10 mL/minute: 0.5 to 1 g daily

In patients undergoing dialysis, 0.5 to 1 g daily is given after dialysis.

Preparations

Proprietary Preparations (details are given in Part 3)
Austria: Timecef; ***Ital.:*** Diezime; Modivid; Timecef; ***Jpn:*** Kenicef; ***Mex.:*** Modivid†; ***NZ:*** Timecef; ***Port.:*** Modivid; ***Turk.:*** Modivid.

Cefonicid Sodium *(BANM, USAN, rINNM)*

Cefonicid sódico; Cefonicide sodique; Céfonicide Sodique; Cefonicidum natricum; Natrii Cefonicidum; SKF-D-75073-Z_2; SKF-D-75073-Z (cefonicid monosodium). 7-[(*R*)-Mandelamido]-3-(1-sulphomethyl-1*H*-tetrazol-5-ylthiomethyl)-3-cephem-4-carboxylic acid, disodium salt.

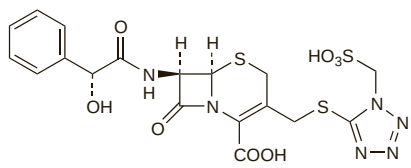
Натрий Цефоницид

$C_{18}H_{16}N_6Na_2O_8S_3$ = 586.5.

CAS — 61270-58-4 (cefonicid); 61270-78-8 (cefonicid disodium); 71420-79-6 (cefonicid monosodium).

ATC — J01DC06.

ATC Vet — QJ01DC06.



(cefonicid)

Pharmacopoeias. In *US.*

USP 31 (Cefonicid Sodium). A white to off-white solid. Freely soluble in water, in sodium chloride 0.9%, and in glucose 5%; very slightly soluble in dehydrated alcohol; soluble in methyl alcohol. pH of a 5% solution in water is between 3.5 and 6.5. Store in airtight containers.

Adverse Effects and Precautions

As for Cefalotin Sodium, p.219.

Cefonicid contains a substituted *N*-methylthiotetrazole side-chain, a structure associated with hypoprothrombinaemia.

Effects on the blood. References.

1. Riancho JA, *et al.* Life-threatening bleeding in a patient treated with cefonicid. *Ann Intern Med* 1995; **123:** 472–3.

Effects on the liver. References.

1. Famularo G, *et al.* Eosinophilic hepatitis associated with cefonicid therapy. *Ann Pharmacother* 2001; **35:** 1669–71.

Sodium content. Each g of cefonicid sodium contains about 3.4 mmol of sodium.

Interactions

As for Cefamandole, p.221.

Antimicrobial Action

Cefonicid sodium has an antimicrobial action and pattern of resistance similar to those of cefamandole (p.221), although it is generally less active against Gram-positive cocci.

Pharmacokinetics

Cefonicid is given parenterally as the sodium salt. Peak plasma concentrations ranging from 67 to 126 micrograms/mL have been achieved 1 to 2 hours after a 1-g intramuscular dose. Cefonicid is more than 90% bound to plasma proteins. It has a plasma half-life of about 4.5 hours, which is prolonged in patients with renal impairment.

Therapeutic concentrations of cefonicid have been reported in a wide range of body tissues and fluids.

Up to 99% of a dose of cefonicid is excreted unchanged in the urine within 24 hours. Probenecid reduces excretion of cefonicid.

Uses and Administration

Cefonicid is a second-generation cephalosporin antibacterial used similarly to cefamandole (p.221) in the treatment of susceptible infections and for surgical infection prophylaxis.

It is given as the sodium salt by deep intramuscular injection, or intravenously by slow injection over 3 to 5 minutes or by infusion. Doses are expressed in terms of the equivalent amount of cefonicid; 1.08 g of cefonicid sodium is equivalent to about 1 g of cefonicid. The usual dose is cefonicid 1 g once daily. For uncomplicated urinary-tract infections, a dose of 500 mg once daily is recommended; up to 2 g once daily has been given in severe infections. More than 1 g should not be injected intramuscularly into a single site.

For surgical infection prophylaxis, a single dose of 1 g given 1 hour before surgical incision is usually sufficient, but may be given daily for a further 2 days in prosthetic arthroplasty or open-heart surgery.

◊ References.

1. Saltiel E, Brogden RN. Cefonicid: a review of its antibacterial activity, pharmacological properties and therapeutic use. *Drugs* 1986; **32:** 222–59.

Administration in renal impairment. For patients with renal impairment a loading dose equivalent to cefonicid 7.5 mg/kg is recommended, followed by reduced maintenance doses according to the creatinine clearance and the severity of the infection. A dose supplement is not required after dialysis.

Preparations

USP 31: Cefonicid for Injection.

Proprietary Preparations (details are given in Part 3)
Belg.: Monocid†; ***Israel:*** Monocef; ***Ital.:*** Abiocef†; Auricid†; Bacid†; Biocil; Bioticic; Cefobacter; Cefodie; Cefoger†; Cefok; Cefoplus; Cefosporin†; Chefir; Clastidin†; Daycef; Delsacid†; Diespor; Emidoxin; Epicef†; Fonexel†; Fonicef†; Fonicid; Fonisal†; Framecef; Ipacid†; Krucef; Lampocef†; Lisa; Maxid; Microcid†; Modicef; Modiem; Monobios; Monobiotic; Monocid†; Necid; Nokid; Pantacid†; Parecid; Praticef; Raikocef; Renbiocid†; Rocid†; Silverce†; Sintocef; Sofarcid; Unicid†; Valecid; ***Port.:*** Monocid; ***Spain:*** Monocid; Unidie; ***USA:*** Monocid†.