urinary-tract infections. For details of these infections and their treatment, see under Choice of Antibacterial, p.162.

Administration and dosage. Cefoxitin is given as the sodium salt by deep intramuscular injection, by slow intravenous injection over 3 to 5 minutes, or by intermittent or continuous intravenous infusion.

Doses are expressed in terms of the equivalent amount of cefoxitin; 1.05 g of cefoxitin sodium is equivalent to about 1 g of cefoxitin. The usual adult dose is 1 or 2 g every 8 hours although it may be given more frequently (every 4 or 6 hours). In severe infections up to 12 g daily has been recommended. Children and neonates may be given 20 to 40 mg/kg, every 12 hours for neonates up to 1 week old, every 8 hours for those aged 1 to 4 weeks, and every 6 to 8 hours for older infants and children; in severe infections, up to 200 mg/kg daily may be given, to a maximum of 12 g daily.

For the treatment of uncomplicated urinary-tract infections, cefoxitin 1 g twice daily has been given intramuscularly.

For details of reduced doses of cefoxitin in patients with renal impairment, see below.

For the treatment of uncomplicated gonorrhoea, a single dose of 2 g intramuscularly has been given with probenecid 1 g orally.

For surgical infection prophylaxis, the usual adult dose is cefoxitin 2 g intramuscularly or intravenously 30 to 60 minutes before the procedure and then every 6 hours, not usually for more than 24 hours. Infants and children undergoing surgical procedures can be given doses of 30 to 40 mg/kg, at the same time intervals as adults; neonates may be given 30 to 40 mg/kg, but at intervals of 8 to 12 hours.

At caesarean section a single 2-g dose may be given intravenously to the mother as soon as the umbilical cord is clamped. If necessary, a 3-dose regimen, with further 2-g doses 4 and 8 hours after the initial dose, may be used.

◊ Reviews.

1. DiPiro JT, May JR. Use of cephalosporins with enhanced antianaerobic activity for treatment and prevention of anaerobic and mixed infections. *Clin Pharm* 1988; **7:** 285–302.
2. Goodwin CS. Cefoxitin 20 years on: is it still useful? *Rev Med Microbiol* 1995; **6:** 146–53.

Administration in renal impairment. In renal impairment, dosage of cefoxitin should be reduced according to creatinine clearance (CC). After an initial loading dose of 1 to 2 g, maintenance doses are:

- CC 30 to 50 mL/minute: 1 to 2 g every 8 to 12 hours
- CC 10 to 29 mL/minute: 1 to 2 g every 12 to 24 hours
- CC 5 to 9 mL/minute: 0.5 to 1 g every 12 to 24 hours
- CC below 5 mL/minute: 0.5 to 1 g every 24 to 48 hours

In patients undergoing haemodialysis, the loading dose should be repeated after each dialysis session.

Preparations

BP 2008: Cefoxitin Injection;
USP 31: Cefoxitin for Injection; Cefoxitin Injection.

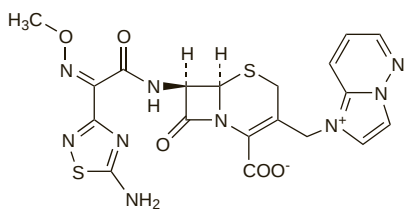
Proprietary Preparations (details are given in Part 3)
Arg.: Mefoxin†; Pluricefo†; ***Austral.:*** Mefoxin; ***Austria:*** Mefoxitin; ***Belg.:*** Mefoxin†; ***Braz.:*** Cefoxan; Cefoxin; Cefton; Foxtil†; Gamacef; Mefoxin; Propoten†; ***Canad.:*** Mefoxin†; ***Cz.:*** Mefoxin†; ***Fin.:*** Mefoxin†; ***Fr.:*** Mefoxin†; ***Ger.:*** Mefoxitin; ***Gr.:*** Destrepen†; Mefoxil; Metaptyl; ***Hong Kong:*** Mefoxin; ***Ital.:*** Cefociclin; Mefoxin; Tifox†; ***Neth.:*** Mefoxin†; ***Norw.:*** Mefoxitin†; ***NZ:*** Mefoxin; ***Philipp.:*** Monowel; Panafox; Zepax; ***Port.:*** Atralxitina; Mefoxin†; Niacef; ***S.Afr.:*** Mefoxin; ***Spain:*** Mefoxitin†; ***Swed.:*** Mefoxitin†; ***Switz.:*** Mefoxitin†; ***Thai.:*** Cefoxin; Cefxitin; Maxotin; Zefin; ***UK:*** Mefoxin†; ***USA:*** Mefoxin; ***Venez.:*** Mefoxitin†.

Cefozopran Hydrochloride *(rINNM)*

Céfozopran, Chlorhydrate de; Cefozoprani Hydrochloridum; Hidrocloruro de cefozoprán. (–)-1-{[(6*R*,7*R*)-7-[2-(5-Amino-1,2,4-thiadiazol-3-yl)glyoxylamido]-2-carboxy-8-oxo-5-thia-1-azabicyclo[4.2.0]oct-2-en-3-yl]methyl}-1*H*-imidazo[1,2-*b*]pyridazin-4-ium hydroxide inner salt, 7²-(*Z*)-(*O*-methyloxime), hydrochloride.

Цефозопрана Гидрохлорид

$C_{19}H_{17}N_9O_5S_2,HCl$ = 552.0.
CAS — 113359-04-9 (cefozopran); 113981-44-5 (cefozopran hydrochloride).



(cefozopran)

Pharmacopoeias. In *Jpn.*

Profile
Cefozopran is a cephalosporin antibacterial used parenterally as the hydrochloride.

◊ References.

1. Iwahi T, *et al.* In vitro and in vivo activities of SCE-2787, a new parenteral cephalosporin with a broad antibacterial spectrum. *Antimicrob Agents Chemother* 1992; **36:** 1358–66.
2. Paulfeuerborn W, *et al.* Comparative pharmacokinetics and serum bactericidal activities of SCE-2787 and ceftazidime. *Antimicrob Agents Chemother* 1993; **37:** 1835–41.
3. Fujii R, *et al.* Pharmacokinetics and clinical effects of cefozopran in pediatric patients. *Jpn J Antibiot* 1996; **49:** 17–33.

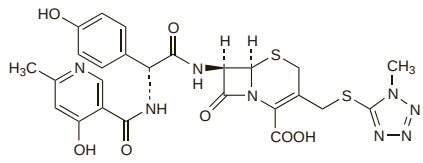
Preparations
Proprietary Preparations (details are given in Part 3)
Jpn: Firstcin.

Cefpiramide *(USAN, rINN)*

Cefpiramida; Cefpiramidum; SM-1652; Wy-44635. (7*R*)-7-[(*R*)-2-(4-Hydroxy-6-methylnicotinamido)-2-(4-hydroxyphenyl)acetamido]-3-(1-methyl-1*H*-tetrazol-5-ylthiomethyl)-3-cephem-4-carboxylic acid.

Цефпирамид

$C_{25}H_{24}N_8O_7S_2$ = 612.6.
CAS — 70797-11-4.
ATC — J01DD11.
ATC Vet — QJ01DD11.



Pharmacopoeias. In *US.*
USP 31 (Cefpiramide). Store in airtight containers. pH of a 0.5% suspension in water is between 3.0 and 5.0.

Cefpiramide Sodium *(USAN, rINNM)*

Cefpiramida sódica; Cefpiramide Sodique; Natrii Cefpiramidum.

Натрий Цефпирамид

$C_{25}H_{23}N_8NaO_7S_2$ = 634.6.
CAS — 74849-93-7.
ATC — J01DD11.
ATC Vet — QJ01DD11.

Pharmacopoeias. In *Jpn.*

Profile
Cefpiramide is a third-generation cephalosporin antibacterial related to cefoperazone (p.227) and with similar activity against *Pseudomonas aeruginosa*, but possibly less active against Enterobacteriaceae. Cefpiramide is also active against staphylococci and streptococci and marginal activity against enterococci *in vitro* has been reported. Like cefamandole (p.220), cefpiramide contains an *N*-methylthiotetrazole side-chain, a structure associated with hypoprothrombinaemia, alcohol intolerance, and potentiation of anticoagulants.

Cefpiramide is given by intravenous injection or infusion as the sodium salt in the treatment of susceptible infections but doses are expressed in terms of cefpiramide; 1.04 g of cefpiramide sodium is equivalent to about 1 g of cefpiramide. The usual dose is 1 to 2 g daily in 2 divided doses.

◊ References.

1. Wang H, *et al.* In-vitro antibacterial activities of cefpiramide and other broad-spectrum antibiotics against 440 clinical isolates in China. *J Infect Chemother* 2000; **6:** 81–5.

Sodium content. Each g of cefpiramide sodium contains about 1.6 mmol of sodium.

Preparations
USP 31: Cefpiramide for Injection.

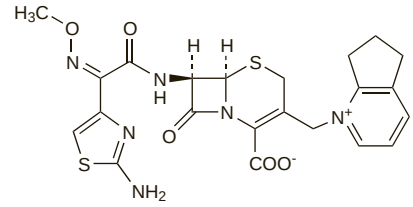
Proprietary Preparations (details are given in Part 3)
Jpn: Sepatren.

Cefpirome Sulfate *(USAN, rINNM)*

Cefpirome, sulfate de; Cefpirome Sulphate *(BANM)*; Cefpiromi sulfas; Cefpiromsulfat; HR-810 (cefpirome or cefpirome sulfate); Kefpiromisulfaatti; Sulfato de cefpiroma. (*Z*)-7-[2-(2-Aminothiazol-4-yl)-2-methoxyiminoacetamido]-3-(1-pyrindiniomethyl)-3-cephem-4-carboxylate sulphate.

Цефпирома Сульфат

$C_{22}H_{22}N_6O_5S_2,H_2SO_4$ = 612.7.
CAS — 84957-29-9 (cefpirome); 98753-19-6 (cefpirome sulfate).
ATC — J01DE02.
ATC Vet — QJ01DE02.



(cefpirome)

Pharmacopoeias. In *Jpn.*

Adverse Effects and Precautions
As for Cefalotin, p.219.

Cefpirome is reported to interfere with the Jaffé method of measuring creatinine concentrations to determine renal function.

◊ References.

1. Rubinstein E, *et al.* A review of the adverse events profile of cefpirome. *Drug Safety* 1993; **9:** 340–5.

Interactions
Probenecid reduces the renal clearance of cefpirome.

Antimicrobial Action
Cefpirome is a fourth-generation cephalosporin that is stable to a wide range of beta-lactamases. It has a spectrum of activity similar to that of the third-generation cephalosporin cefotaxime (p.228), but it appears to be more active *in vitro* against staphylococci, some enterococci, some Enterobacteriaceae, and *Pseudomonas aeruginosa*. Cefpirome may be less active than ceftazidime (p.234) against *Ps. aeruginosa*.

Pharmacokinetics
Cefpirome is given by injection as the sulfate. Mean peak serum concentrations of 80 to 90 micrograms/mL are attained after a single intravenous 1-g dose. The elimination half-life is about 2 hours and is prolonged in patients with renal impairment. Cefpirome is less than 10% bound to plasma proteins.

Cefpirome is widely distributed into body tissues and fluids and appears in breast milk. It is mainly excreted by the kidneys and 80 to 90% of a dose is recovered unchanged in the urine. Significant amounts are removed by haemodialysis.

Uses and Administration
Cefpirome is a fourth-generation cephalosporin antibacterial used in the treatment of infections due to susceptible organisms. They include infections of the urinary tract, respiratory tract, and skin, and also septicaemia and infections in immunocompromised patients. For details of these infections and their treatment, see under Choice of Antibacterial, p.162.

Cefpirome is given by intravenous injection over 3 to 5 minutes or infusion over 20 to 30 minutes as the sulfate, but doses are expressed in terms of the base; 1.19 g of cefpirome sulfate is equivalent to about 1 g of cefpirome. The usual dose is the equivalent of 1 or 2 g of cefpirome every 12 hours. For details of reduced doses to be used in renal impairment, see below.

◊ References.

1. Brown EM, *et al.* eds. Cefpirome: a novel extended spectrum cephalosporin. *J Antimicrob Chemother* 1992; **29** (suppl A): 1–104.
2. Wiseman LR, Lamb HM. Cefpirome: a review of its antibacterial activity, pharmacokinetic properties and clinical efficacy in the treatment of severe nosocomial infections and febrile neutropenia. *Drugs* 1997; **54:** 117–40.

Administration in renal impairment. Dosage of cefpirome should be modified in renal impairment; after a loading dose of 1 or 2 g depending on the severity of infection, the maintenance dosage should be adjusted according to creatinine clearance (CC) and the severity of infection:

- CC 20 to 50 mL/minute: 0.5 or 1 g twice daily
- CC 5 to 20 mL/minute: 0.5 or 1 g once daily
- CC 5 mL/minute or less (in haemodialysis patients): 0.5 or 1 g once daily plus a half-dose after each dialysis session.