Carfecillin Sodium *(BANM, pINNM)*

BRL-3475; Carbenicillin Phenyl Sodium *(USAN)*; Carfecilina sódica; Carfécilline Sodique; Natrii Carfecillinum. Sodium (6*R*)-6-(2-phenoxycarbonyl-2-phenylacetamido)penicillanate.

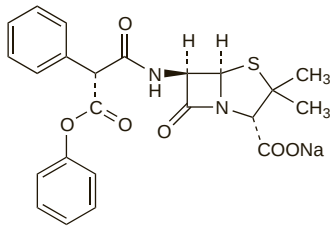
Натрий Карфециллин

$C_{23}H_{21}N_2NaO_6S$ = 476.5.

CAS — 27025-49-6 (carfecillin); 21649-57-0 (carfecillin sodium).

ATC — G01AA08.

ATC Vet — QG01AA08.



Profile

Carfecillin is the phenyl ester of carbenicillin (p.216) to which it is hydrolysed after absorption from the gastrointestinal tract. Its use has been restricted to the treatment of urinary-tract infections due to *Pseudomonas* spp. and other sensitive bacteria including *Proteus* spp.

Carindacillin Sodium *(BANM, pINNM)*

Carbenicillin Indanyl Sodium *(USAN)*; Carindacilina sódica; Carindacilline Sodique; CP-15464-2; Natrii Carindacillinum. Sodium (6*R*)-6-[2-(indan-5-yloxycarbonyl)-2-phenylacetamido]penicillanate.

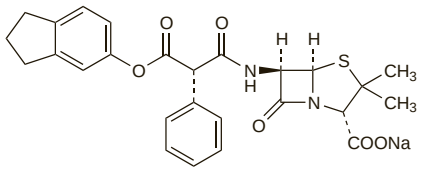
Натрий Кариндациллин

$C_{26}H_{25}N_2NaO_6S$ = 516.5.

CAS — 35531-88-5 (carindacillin); 26605-69-6 (carindacillin sodium).

ATC — J01CA05.

ATC Vet — QJ01CA05.



Pharmacopoeias. In *US*.

USP 31 (Carbenicillin Indanyl Sodium). A white to off-white powder. Soluble in water and in alcohol. pH of a 10% solution in water is between 5.0 and 8.0. Store in airtight containers.

Profile

Carindacillin is the indanyl ester of carbenicillin (p.216) to which it is hydrolysed after absorption from the gastrointestinal tract. Its use is restricted to the treatment of urinary-tract infections due to *Pseudomonas* spp. and other sensitive bacteria including *Proteus* spp.

Carindacillin is given orally as the sodium salt; 535 mg of carindacillin sodium is equivalent to about 382 mg of carbenicillin. Usual doses, expressed in terms of carbenicillin, are 382 to 764 mg four times daily.

Sodium content. Each g of carindacillin sodium contains about 1.9 mmol of sodium.

Preparations

USP 31: Carbenicillin Indanyl Sodium Tablets.

Proprietary Preparations (details are given in Part 3)
USA: Geocillin†.

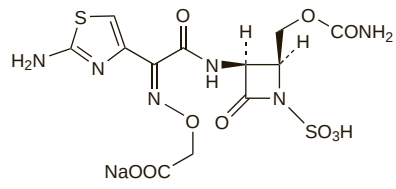
Carumonam Sodium *(BANM, USAN, rINNM)*

AMA-1080 (carumonam); Carumonam sódico; Carumonam Sodique; Natrii Carumonamum; Ro-17-2301 (carumonam); Ro-17-2301/006 (carumonam sodium). (*Z*)-(2-Aminothiazol-4-yl){[(2*S*,3*S*)-2-carbamoyloxymethyl-4-oxo-1-sulphoazetidin-3-yl]carbamoyl}methyleneamino-oxyacetic acid, disodium salt.

Натрий Карумонам

$C_{12}H_{12}N_6Na_2O_{10}S_2$ = 510.4.

CAS — 87638-04-8 (carumonam); 86832-68-0 (carumonam sodium).



(carumonam)

Pharmacopoeias. In *Jpn*.

Profile

Carumonam is a monobactam antibacterial with a spectrum of antimicrobial action *in vitro* similar to that of aztreonam (p.209). It is given by intramuscular or intravenous injection as the sodium salt and doses are expressed in terms of carumonam; 1.09 g of carumonam sodium is equivalent to about 1 g of carumonam. The usual dose is 1 to 2 g daily in two divided doses.

Sodium content. Each g of carumonam sodium contains about 3.92 mmol of sodium.

Preparations

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

Cefaclor *(BAN, USAN, pINN)*

Céfaclor; Cefaclorum; Cefaclorum Monohydricum; Cefaklór; Cefaklor; Cefaklor monohydrát; Cefakloras; Compound 99638; Kefakloori; Sefaklor. (7*R*)-3-Chloro-7-(α-D-phenylglycylamino)-3-cephem-4-carboxylic acid monohydrate.

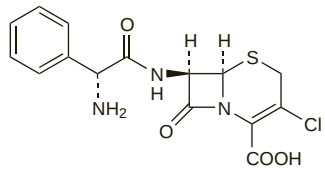
Цефаклор

$C_{15}H_{14}ClN_3O_4S,H_2O$ = 385.8.

CAS — 53994-73-3 (anhydrous cefaclor); 70356-03-5 (cefaclor monohydrate).

ATC — J01DC04.

ATC Vet — QJ01DC04.



Pharmacopoeias. In *Chin.*, *Eur.* (see p.vii), and *US*. *Jpn* includes the anhydrous substance.

Ph. Eur. 6.2 (Cefaclor). A white or slightly yellow powder. Slightly soluble in water; practically insoluble in dichloromethane and in methyl alcohol. A 2.5% suspension in water has a pH of 3.0 to 4.5.

USP 31 (Cefaclor). A white to off-white crystalline powder. Slightly soluble in water; practically insoluble in chloroform, in methyl alcohol, and in benzene. pH of a 2.5% suspension in water is between 3.0 and 4.5. Store in airtight containers.

Adverse Effects and Precautions

As for Cefalexin, p.218.

Hypersensitivity. Serum-sickness-like reactions may be more common with cefaclor than several other oral antibacterials[1] especially in young children who have received a number of courses of cefaclor;[2] typical features include skin reactions and arthralgia. A relatively high incidence of anaphylactic reactions has been reported from Japan.[3]

There has been a report of myocarditis that developed as a hypersensitivity reaction to cefaclor in a 12-year-old child.[4]

1. McCue JD. Delayed detection of serum sickness caused by oral antimicrobials. *Adv Therapy* 1990; **7**: 22–7.
2. Vial T, *et al.* Cefaclor-associated serum sickness-like disease: eight cases and review of the literature. *Ann Pharmacother* 1992; **26:** 910–14.
3. Hama R, Mori K. High incidence of anaphylactic reactions to cefaclor. *Lancet* 1988; **i**: 1331.
4. Beghetti M, *et al.* Hypersensitivity myocarditis caused by an allergic reaction to cefaclor. *J Pediatr* 1998; **132:** 172–3.

Interactions

As for Cefalexin, p.218.

Anticoagulants. UK licensed product information recommends that monitoring of prothrombin time should be considered in patients receiving cefaclor and *warfarin* after rare reports of increased prothrombin times. It is not known whether this interaction is related to the vitamin K-related hypoprothrombinaemia observed with some cephalosporins (see Adverse Effects of Cefamandole, p.221), but cefaclor does not contain the side-chain usually implicated in this reaction.

Antimicrobial Action

Cefaclor is bactericidal and has antimicrobial activity similar to that of cefalexin (p.218) but is reported to be more active against Gram-negative bacteria including *Escherichia coli*, *Klebsiella pneumoniae*, *Neisseria gonorrhoeae*, and *Proteus mirabilis*, and especially against *Haemophilus influenzae*. It is active against some beta-lactamase-producing strains of *H. influenzae*. It may be less resistant to staphylococcal penicillinase than cefalexin or cefradine and a marked inoculum effect has been reported *in vitro*.

Pharmacokinetics

Cefaclor is well absorbed from the gastrointestinal tract. Oral doses of 250 mg, 500 mg, and 1 g produce peak plasma concentrations of about 7, 13, and 23 micrograms/mL respectively after 0.5 to 1 hour. The presence of food may delay the absorption of cefaclor, but the total amount absorbed is unchanged. A plasma half-life of 0.5 to 1 hour has been reported; it may be slightly prolonged in patients with renal impairment. About 25% is bound to plasma proteins.

Cefaclor appears to be widely distributed in the body; it crosses the placenta and low concentrations have been detected in breast milk. It is rapidly excreted by the kidneys; up to 85% of a dose appears unchanged in the urine within 8 hours, the greater part within 2 hours. High concentrations of cefaclor are achieved in the urine within 8 hours of a dose; peak concentrations of 600, 900, and 1900 micrograms/mL have been reported after doses of 0.25, 0.5, and 1 g respectively. Probenecid delays excretion. Some cefaclor is removed by haemodialysis.

◊ References.

1. Wise R. The pharmacokinetics of the oral cephalosporins—a review. *J Antimicrob Chemother* 1990; **26** (suppl E): 13–20.
2. Sourgens H, *et al.* Pharmacokinetic profile of cefaclor. *Int J Clin Pharmacol Ther* 1997; **35:** 374–80.

Uses and Administration

Cefaclor is a cephalosporin antibacterial given orally similarly to cefalexin in the treatment of susceptible infections including upper and lower respiratory-tract infections, skin infections, and urinary-tract infections. Some classify cefaclor as a second-generation cephalosporin and its greater activity against *Haemophilus influenzae* makes it more suitable than cefalexin for the treatment of infections such as otitis media. For details of these infections and their treatment, see under Choice of Antibacterial, p.162.

Cefaclor is given as the monohydrate. Doses are expressed in terms of the equivalent amount of anhydrous cefaclor; 1.05 g of cefaclor monohydrate is equivalent to about 1 g of anhydrous cefaclor. The usual adult dose is 250 to 500 mg every 8 hours; up to 4 g daily has been given. A suggested dose for children over 1 month of age is 20 mg/kg daily in three divided doses, increased if necessary to 40 mg/kg daily, but not exceeding a total daily dose of 1 g. A common dosage regimen is: children over 5 years, 250 mg three times daily; 1 to 5 years, 125 mg three times daily; under 1 year, 62.5 mg three times daily.

Modified-release formulations of cefaclor are available in some countries.

Preparations

BP 2008: Cefaclor Capsules; Cefaclor Oral Suspension; Prolonged-release Cefaclor Tablets;
USP 31: Cefaclor Capsules; Cefaclor Chewable Tablets; Cefaclor Extended-Release Tablets; Cefaclor for Oral Suspension.

Proprietary Preparations (details are given in Part 3)
Arg.: Cec†; Cefaklon†; Cefral†; Kwicap†; ***Austral.:*** Aclor; Ceclor; Cefkor; Karlor; Keflor; Ozcef; ***Austria:*** Cec; Ceclor; Cefastad; Cefax; Lanacef†; ***Belg.:*** Ceclor; Doccefaclo; ***Braz.:*** Ceclor†; Cefaclorem; Clorcin-Ped; Faclor†; Plecor†; Reflax†; ***Canad.:*** Ceclor; ***Chile:*** Keflor†; ***Cz.:*** Cec†; Ceclor; Serviclor; Vercef; ***Fin.:*** Kefolor; ***Fr.:*** Alfatil; Alphexine†; Haxifal; ***Ger.:*** Cec; Ceclorbeta; Cef-Diolan; Cefa-Wolff†; Cephalodoc†; Hefaclor†; InfectoCef; Panoral; Sigacefal†; ***Gr.:*** Afecton; Camirox; Ceclor; Cefacloril; Fredyren; Hetaclox; Makovan; Panclor; Phacotrex; Ufoxillin†; ***Hong Kong:*** Castal; Ceclor; Cefalor; Medoclor; Qualiceclor; Qualiphor; Soficlor; Vercef; ***Hung.:*** Ceclor; Cecloretta; Vercef; ***India:*** Halocef; Keflor; ***Indon.:*** Capabi-