creases in liver enzymes and abnormalities in haematological parameters have been reported.

Loracarbef should not be given to patients known to be hypersensitive to it or to other beta lactams because of the possibility of cross-sensitivity. It should be given with caution, with appropriate dosage reduction, in patients with renal impairment.

Effects on the kidneys. References.

1. Thieme RE, *et al.* Acute interstitial nephritis associated with loracarbef therapy. *J Pediatr* 1995; **127:** 997–1000.

Interactions

Probenecid decreases the renal excretion of loracarbef thereby increasing its plasma concentrations.

Antimicrobial Action

Loracarbef is bactericidal with antibacterial activity similar to that of cefaclor (p.217).

Pharmacokinetics

Loracarbef is well absorbed from the gastrointestinal tract with a bioavailability of 90%. Peak plasma concentrations after 200- and 400-mg doses as capsules are about 8 and 14 micrograms/mL respectively at 1.2 hours. Peak concentrations are achieved more rapidly after an oral suspension and a paediatric dose of 15 mg/kg produces a concentration of about 19 micrograms/mL within 40 to 60 minutes. Absorption is delayed by the presence of food. A plasma half-life of about 1 hour has been reported which is prolonged in renal impairment. About 25% is bound to plasma proteins.

Loracarbef is excreted largely unchanged in the urine, and therapeutic concentrations are maintained in the urine for up to 12 hours. Probenecid delays excretion. Loracarbef is removed by haemodialysis.

Uses and Administration

Loracarbef is an oral carbacephem antibiotic. The carbacephems are closely related to the cephalosporins, but replacement of the sulfur atom in the 7-aminocephalosporanic acid nucleus by a methylene group is said to enhance stability. It is used similarly to cefaclor in the treatment of susceptible infections of the respiratory and urinary tracts and of skin and soft tissue. For details of these infections and their treatment, see under Choice of Antibacterial, p.162.

Loracarbef should be given 1 hour before food or on an empty stomach. Loracarbef is given as the monohydrate. Doses are expressed in terms of the equivalent amount of anhydrous loracarbef. The usual adult dose is 200 to 400 mg every 12 hours. In uncomplicated urinary-tract infections, a dose of 200 mg daily may be adequate. A dose for children is 7.5 mg/kg every 12 hours for uncomplicated infections or 15 mg/kg every 12 hours for acute otitis media or acute maxillary sinusitis.

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

◊ General references.

1. Moellering RC, Jacobs NF. Advances in outpatient antimicrobial therapy: loracarbef. *Am J Med* 1992; **92** (suppl 6A): 1S–103S.
2. Brogden RN, McTavish D. Loracarbef: a review of its antimicrobial activity, pharmacokinetic properties and therapeutic efficacy. *Drugs* 1993; **45:** 716–36.

Administration in renal impairment. Doses of loracarbef should be reduced in patients with renal impairment; patients with a creatinine clearance of 10 to 49 mL/minute may be given half the usual dose at the usual dosage interval or the full usual dose at twice the usual interval; patients with a creatinine clearance of less than 10 mL/minute may be treated with the usual dose given every 3 to 5 days. Patients on haemodialysis should receive another dose following dialysis.

Preparations

USP 31: Loracarbef Capsules; Loracarbef for Oral Suspension.

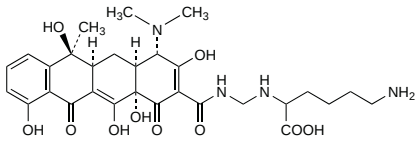
Proprietary Preparations (details are given in Part 3)
Ger.: Lorafem; ***Gr.:*** Lorbef; ***Mex.:*** Carbac†; Lorabid†; ***S.Afr.:*** Lorabid; ***Swed.:*** Lorabid; ***Turk.:*** Lorabid; ***USA:*** Lorabid†.

Lymecycline *(BAN, rINN)*

Limeciclina; Limesiklin; Lymécycline; Lymecyclinum; Lymecyklin; Lymecyklina; Lymesykliini; Tetracyclinemethylene lysine. (+)-*N*-(5-Amino-5-carboxypentylaminomethyl)-4-dimethylamino-1,4,4a,5,5a,6,11,12a-octahydro-3,6,10,12,12a-pentahydroxy-6-methyl-1,11-dioxonapthacene-2-carboxamide; N^2-{[(+)-5-Amino-5-carboxypentylamino]methyl}tetracycline.

Лимециклин

$C_{29}H_{38}N_4O_{10}$ = 602.6.
CAS — 992-21-2.
ATC — J01AA04.
ATC Vet — QJ01AA04.



Pharmacopoeias. In *Eur.* (see p.vii).

Ph. Eur. 6.2 (Lymecycline). A reaction product of formaldehyde, lysine, and tetracycline. A yellow, hygroscopic powder. Very soluble in water; slightly soluble in alcohol; practically insoluble in dichloromethane. A 1% solution in water has a pH of 7.8 to 8.2. Store in airtight containers. Protect from light.

Profile

Lymecycline is a tetracycline derivative with general properties similar to those of tetracycline (p.347). Although its absorption is not significantly affected by moderate amounts of milk, it is still affected by divalent and trivalent cations such as aluminium, bismuth, calcium, iron, magnesium, and zinc.

Lymecycline is given orally and doses are expressed in terms of the equivalent amount of tetracycline base. Lymecycline 407 mg is equivalent to about 300 mg of tetracycline and to about 325 mg of tetracycline hydrochloride. The usual adult dose is the equivalent of 300 mg of tetracycline base twice daily. In severe infections total daily doses of up to the equivalent of 1.2 g may be given. In the treatment of acne, the equivalent of 300 mg is given daily for at least 8 weeks.

For details of use in children and adolescents, see below.

Administration in children. In children, the effects on teeth should be considered and tetracyclines only used when absolutely essential. In the UK, lymecycline is licensed for use in children aged 12 years and over; the usual adult dose (see above) may be given by mouth. However, in some countries, it is licensed for use in those over 8 years old.

Skin disorders. For reference to the use of lymecycline in the treatment of acne, see under Tetracycline, p.350.

Preparations

BP 2008: Lymecycline Capsules.

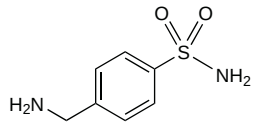
Proprietary Preparations (details are given in Part 3)
Arg.: Tetralysal; ***Austria:*** Tetralysal; ***Belg.:*** Tetralysal; ***Braz.:*** Tetralysal; ***Denm.:*** Tetralysal; ***Fin.:*** Tetralysal; ***Fr.:*** Tetralysal; ***Hong Kong:*** Tetralysal; ***Hung.:*** Tetralysal; ***Irl.:*** Tetralysal; ***Ital.:*** Tetralysal; ***Mex.:*** Tetralisal; ***Norw.:*** Tetralysal; ***NZ:*** Tetralysal; ***Philipp.:*** Tetralysal; ***S.Afr.:*** Tetralysal; ***Swed.:*** Tetralysal; ***Switz.:*** Tetralysal; ***UK:*** Tetralysal; ***Venez.:*** Tetralysal.

Mafenide *(BAN, USAN, rINN)*

Mafenid; Mafenida; Maféride; Mafenidi; Mafenidum; NSC-34632. α-Aminotoluene-*p*-sulphonamide.

Мафенид

CAS — 138-39-6.
ATC — D06BA03.
ATC Vet — QD06BA03.



Mafenide Acetate *(BANM, rINNM)*

Acetato de mafenida; Maféride, Acétate de; Mafenidi Acetas.

Мафенида Ацетат

$C_7H_{10}N_2O_2S,C_2H_4O_2$ = 246.3.
CAS — 13009-99-9.
ATC — D06BA03.
ATC Vet — QD06BA03.

Pharmacopoeias. In *Chin.* and *US.*

USP 31 (Mafenide Acetate). A white to pale yellow crystalline powder. Freely soluble in water. pH of a 10% solution in water is between 6.4 and 6.8. Store in airtight containers. Protect from light.

Adverse Effects, Treatment, and Precautions

Mafenide is absorbed to some extent after topical application and may produce systemic effects similar to those of other sulfonamides (see Sulfamethoxazole, p.340). Fatal haemolytic anaemia with disseminated intravascular coagulation, related to G6PD deficiency, has been reported.

Mafenide cream may cause pain or a burning sensation on application to the burnt area, with occasional bleeding or excoriation. The separation of the eschar may be delayed and fungal invasion of the wound has been reported. By its action in inhibiting carbonic anhydrase, mafenide may cause metabolic acidosis and hyperventilation; acid–base balance should therefore be monitored, particularly in patients with extensive burns, or with pulmonary or renal impairment. If persistent acidosis occurs, mafenide treatment should be temporarily suspended and fluid therapy continued.

Pharmacokinetics

Mafenide is absorbed from wounds into the circulation and is metabolised to *p*-carboxybenzenesulfonamide, which is excreted in the urine. The metabolite has no antibacterial action but retains the ability to inhibit carbonic anhydrase.

Uses and Administration

Mafenide is a sulfonamide that is not inactivated by *p*-aminobenzoic acid or by pus and serum. The acetate is used as a cream, containing the equivalent of mafenide 8.5%, in conjunction with debridement, for the prevention and treatment of infection, including *Pseudomonas aeruginosa*, in second- and third-degree burns (p.1578). A solution containing mafenide acetate 5% is also available for use under moist dressings in burns. Mafenide hydrochloride and mafenide propionate have also been used.

Preparations

USP 31: Mafenide Acetate Cream; Mafenide Acetate for Topical Solution.

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

Multi-ingredient: ***Indon.:*** FG Ointment; ***Spain:*** Pental Forte†.

Magainins

Magaininas.

Магаинины

Profile

The magainins are a group of antibacterial peptides derived from amphibians. A number of semisynthetic derivatives including pexiganan acetate (MSI-78), MSI-93, and MSI-94 have been investigated as topical anti-infectives.

◊ References.

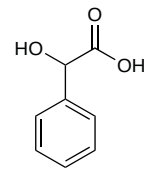
1. Lamb HM, Wiseman LR. Pexiganan acetate. *Drugs* 1998; **56:** 1047–52.
2. Rao N, Lipsky BA. Optimising antimicrobial therapy in diabetic foot infections. *Drugs* 2007; **67:** 195–214.

Mandelic Acid

Ácido fenilglicólico; Ácido mandélico racémico; Amygdalic Acid; Mandélico, ácido; Phenylglycolic Acid; Racemic Mandelic Acid. 2-Hydroxy-2-phenylacetic acid.

Миндальная Кислота

$C_8H_8O_3$ = 152.1.
CAS — 90-64-2; 17199-29-0 ((+)-mandelic acid); 611-71-2 ((–)-mandelic acid); 611-72-3 ((±)-mandelic acid).
ATC — B05CA06; J01XX06.
ATC Vet — QB05CA06; QJ01XX06.



Profile

Mandelic acid has bacteriostatic properties and is used as a 1% flushing solution for the maintenance of indwelling urinary catheters. Mandelic acid and acetyl mandelic acid are used topically in preparations for the treatment of acne. It was formerly given orally in the treatment of urinary-tract infections, usually as the ammonium or calcium salt.

Mandelic acid is a component of methenamine mandelate (p.298).

Preparations

Proprietary Preparations (details are given in Part 3)
Fr.: Rolip†.

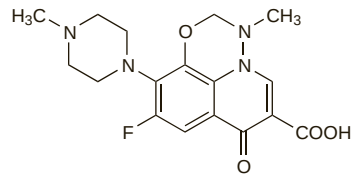
Multi-ingredient: ***Chile:*** Neostrata; ***Fr.:*** Sphingogel†; Zeniac LP Fort†; Zeniac LP†; Zeniac†; ***Ital.:*** Neoceuticals Clear Skin; Neoceuticals Spot Treatment; ***Port.:*** Mandelip†.

Marbofloxacin *(BAN, rINN)*

Marbofloksasiini; Marbofloxacine; Marbofloxacino; Marbofloxacinum. 9-Fluoro-2,3-dihydro-3-methyl-10-(4-methyl-1-piperazinyl)-7-oxo-7*H*-pyrido[3,2,1-*ij*][4,1,2]benzoxadiazine-6-carboxylic acid.

Марбофлоксацин

$C_{17}H_{19}FN_4O_4$ = 362.4.
CAS — 115550-35-1.
ATC Vet — QJ01MA93.



Pharmacopoeias. In *Eur.* (see p.vii) for veterinary use only.

Ph. Eur. 6.2 (Marbofloxacin for Veterinary Use). A light yellow, crystalline powder. Slightly soluble in water; very slightly solu-