B; ***Canad.:*** Fucidin H; ***Chile:*** Fucicort; Fucidin H; ***Cz.:*** Fucicort; Fucidin H; ***Denm.:*** Fucicort; Fucidin-Hydrocortison; ***Fin.:*** Fucicort; Fucidin-Hydrocortison; ***Ger.:*** Fucicort; Fucidine plus†; ***Gr.:*** Alpider; Befucil; Betacort; Betafusin; Betasid; Betfu; Fubecot; Fucicort; Fucicream; Fucidin H; Fusibet; Hydrofusin; Roseti; Sensibio; Staficort; ***Hong Kong:*** Fucicort; Fucidin H; ***Hung.:*** Fucicort; Fucidin H; ***Indon.:*** Fucicort; ***Irl.:*** Fucibet; Fucidin H; ***Israel:*** Fucicort; Fucidin H†; ***Ital.:*** Fucicort; Fucidin H; Piodermina; ***Malaysia:*** Axcel Fusi-Corte; Foban-Hydro; Fobancort; Fucicort; Fucidin H; Fusidic B; ***Mex.:*** Fucicort; ***Norw.:*** Fucidin-Hydrocortison; ***NZ:*** Fucicort; ***Philipp.:*** Fucicort; Fucidin H; Hoebedic; ***Port.:*** Fucicort; Fucidine H; ***Rus.:*** Fucicort (Фуцикорт); Fucidin H (Фуцидин Г); ***S.Afr.:*** Fucidin H; ***Singapore:*** Fobancort; Fucicort; Fucidin H; ***Spain:*** Fucibet; Fucidine H; ***Swed.:*** Fucidin-Hydrocortison; ***Switz.:*** Fucicort; Fucidin H; ***Thai.:*** Fucicort; Fucidin H; ***UAE:*** Futasone; ***UK:*** Fucibet; Fucidin H.

Garenoxacin Mesilate *(BANM, rINNM)*

BMS-284756-01; Garenoxacin Mesylate *(USAN)*; Garénoxacine, Mésilate de; Garenoxacini Mesilas; Mesilato de garenoxacino; T-3811ME. 1-Cyclopropyl-8-(difluoromethoxy)-7-[(1*R*)-1-methyl-2,3-dihydro-1*H*-isoindol-5-yl]-4-oxo-1,4-dihydroquinoline-3-carboxylic acid methanesulfonate monohydrate.

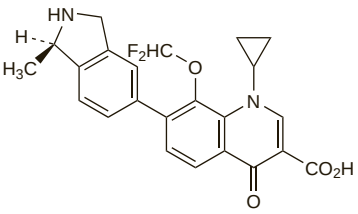
Гареноксацина Мезилат

$C_{23}H_{20}F_2N_2O_4,CH_4O_3S,H_2O$ = 540.5.

CAS — 194804-75-6 (garenoxacin); 223652-82-2 (garenoxacin mesilate); 223652-90-2 (garenoxacin mesilate monohydrate).

ATC — J01MA19.

ATC Vet — QJ01MA19.



(garenoxacin)

Profile

Garenoxacin is a fluoroquinolone antibacterial with properties similar to those of ciprofloxacin (p.247). Garenoxacin is used as the mesilate but doses are given in terms of the base: about 507 mg of the mesilate is equivalent to 400 mg of garenoxacin. It is given orally in the treatment of susceptible infections in usual doses equivalent to 400 mg of garenoxacin daily.

Gatifloxacin *(USAN, rINN)*

AM-1155; BMS-206584-01; CG-5501; Gatifloxacine; Gatifloxacino; Gatifloxacinum. (±)-1-Cyclopropyl-6-fluoro-1,4-dihydro-8-methoxy-7-(3-methyl-1-piperazinyl)-4-oxo-3-quinolinecarboxylic acid sesquihydrate.

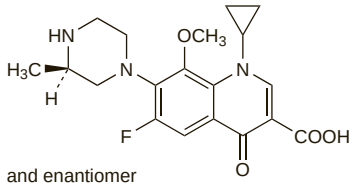
Гатифлоксацин

$C_{19}H_{22}FN_3O_4,1/_2H_2O$ = 402.4.

CAS — 160738-57-8 (anhydrous gatifloxacin); 180200-66-2 (gatifloxacin sesquihydrate).

ATC — J01MA16; S01AX21.

ATC Vet — QJ01MA16; QS01AX21.



and enantiomer

Adverse Effects and Precautions

As for Ciprofloxacin, p.244.

Symptomatic hyperglycaemia and/or hypoglycaemia have been reported in patients (usually diabetics) taking gatifloxacin. However, hypoglycaemia, and particularly hyperglycaemia, have occurred in non-diabetic patients. Severe life-threatening events, including hyperosmolar nonketotic hyperglycaemic coma, diabetic ketoacidosis, hypoglycaemic coma, convulsions, and mental status changes have been reported very rarely. Although in most cases the blood-glucose disturbance was reversible, fatalities have been reported. Gatifloxacin should not be given to diabetic patients. Other risk factors for developing blood-glucose disturbances include older age (patients 65 years of age or over), renal impairment, or use of other drugs that alter blood-glucose concentrations, particularly hypoglycaemics. Patients with risk factors should have their blood-glucose concentrations closely monitored and if signs or symptoms of glucose disturbances develop, gatifloxacin should be stopped.

Effects on glucose metabolism. Hypoglycaemia and hyperglycaemia have been associated with gatifloxacin in both diabetic and non-diabetic patients.[1-6] A review[7] of spontaneous adverse effects reported to the FDA in the USA between November 1997 and September 2003 found the rate of blood-glucose disturbances with gatifloxacin to be 10-fold higher when compared with ciprofloxacin, levofloxacin, and moxifloxacin. Subsequent population-based case-control studies[8] in elderly patients given fluoroquinolones (ciprofloxacin, gatifloxacin, levofloxacin, or moxifloxacin), second-generation cephalosporins, or macrolides also found an increased risk of blood-glucose disturbances with gatifloxacin.

While blood-glucose disturbances appear to be mainly associated with gatifloxacin, the possibility that they may also be a class effect of fluoroquinolones cannot be excluded; patients most at risk are the elderly, those with diabetes and/or those taking hypoglycaemic drugs, and patients with impaired renal function.[9] Twenty two case reports of dysglycaemia associated with the use of levofloxacin were received by Health Canada between January 1997 and June 2006; reported cases included 15 diabetic patients.[10] In contrast a review of the effects of moxifloxacin on blood glucose, including data from large postmarketing studies, suggested it had no significant effect.[11]

1. Baker SE, Hangii MC. Possible gatifloxacin-induced hypoglycemia. *Ann Pharmacother* 2002; **36:** 1722–6.
2. Donaldson AR, *et al.* Possible gatifloxacin-induced hyperglycemia. *Ann Pharmacother* 2004; **38:** 602–5.
3. Happe MR, *et al.* Gatifloxacin-induced hyperglycemia. *Ann Intern Med* 2004; **141:** 968–9.
4. Khovidhunkit W, Sunthornyothin S. Hypoglycemia, hyperglycemia, and gatifloxacin. *Ann Intern Med* 2004; **141:** 969.
5. Greenberg AL, *et al.* Gatifloxacin therapy associated with hypoglycemia. *Clin Infect Dis* 2005; **40:** 1210–11.
6. Blommel AL, Lutes RA. Severe hyperglycemia during renally adjusted gatifloxacin therapy. *Ann Pharmacother* 2005; **39:** 1349–52.
7. Frothingham R. Glucose homeostasis abnormalities associated with use of gatifloxacin. *Clin Infect Dis* 2005; **41:** 1269–76.
8. Park-Wyllie LY, *et al.* Outpatient gatifloxacin therapy and dysglycemia in older adults. *N Engl J Med* 2006; **354:** 1352–61.
9. Lewis RJ, Mohr JF. Dysglycaemias and fluoroquinolones. *Drug Safety* 2008; **31:** 283–92.
10. Health Canada. Levofloxacin: dysglycemia and liver disorders. *Can Adverse React News* 2007; **17:** 1–2. Also available at: http://www.hc-sc.gc.ca/dhp-mps/alt_formats/hpfb-dgpsa/pdf/medeff/ carn-bcei_v17n1-eng.pdf (accessed 17/06/08)
11. Gavin JR, *et al.* Moxifloxacin and glucose homeostasis: a pooled-analysis of the evidence from clinical and postmarketing studies. *Drug Safety* 2004; **27:** 671–86.

Interactions

As for Ciprofloxacin, p.246.

Use of gatifloxacin with drugs that alter blood-glucose concentrations increases the risk of blood-glucose disturbances.

Antidiabetics. Given the adverse effects of gatifloxacin, pharmacodynamic interactions with antidiabetics might reasonably be anticipated. Severe and persistent hypoglycaemia occurred in 3 patients taking oral hypoglycaemics (*repaglinide*, *glibenclamide* and *pioglitazone*, and *glimepiride*) when gatifloxacin was added to their therapy.[1]

1. Menzies DJ, *et al.* Severe and persistent hypoglycemia due to gatifloxacin interaction with oral hypoglycemic agents. *Am J Med* 2002; **113:** 232–4.

Antimicrobial Action

As for Ciprofloxacin, p.246.

Gatifloxacin is reported to have greater activity against Gram-positive bacteria, including pneumococci, than ciprofloxacin.

◊ References.

1. Stein GE, *et al.* Bactericidal activities of methoxyfluoroquinolones gatifloxacin and moxifloxacin against aerobic and anaerobic respiratory pathogens in serum. *Antimicrob Agents Chemother* 2003; **47:** 1308–12.

Pharmacokinetics

Gatifloxacin is readily absorbed from the gastrointestinal tract with an absolute bioavailability of 96%. Peak plasma concentrations occur within 1 to 2 hours of an oral dose. Gatifloxacin is widely distributed into body tissues and is about 20% bound to plasma proteins. It undergoes limited metabolism and has an elimination half-life of 7 to 14 hours. Gatifloxacin is excreted primarily unchanged in the urine with less than 1% as metabolites. About 5% is also excreted unchanged in the faeces. Distribution into milk occurs in *animals*.

Uses and Administration

Gatifloxacin is a fluoroquinolone antibacterial with actions and uses similar to those of ciprofloxacin (p.247).

It is given orally, or by intravenous infusion as a 2 mg/mL solution over 60 minutes, for the treatment of susceptible infections, including respiratory- and urinary-tract infections and skin infections. The usual adult dose is 400 mg once daily. A single dose of 400 mg or a dose of 200 mg daily for 3 days may be adequate for uncomplicated urinary-tract infections.

For details of reduced doses to be used in renal impairment, see below.

A single dose of 400 mg may also be given for the treatment of uncomplicated gonorrhoea.

Gatifloxacin is also used as 0.3% eye drops for the treatment of bacterial conjunctivitis.

◊ Reviews.

1. Keam SJ, *et al.* Gatifloxacin: a review of its use in the treatment of bacterial infections in the US. *Drugs* 2005; **65:** 695–724.

Administration in renal impairment. Doses of gatifloxacin should be reduced in patients with renal impairment; the usual initial dose of 400 mg should be followed by reduced maintenance doses of 200 mg daily in those with a creatinine clearance of less than 40 mL/minute and in those on haemodialysis or continuous peritoneal dialysis.

Preparations

Proprietary Preparations (details are given in Part 3)
Arg.: Gatif; Tequin†; Zymaran; ***Austral.:*** Tequin; ***Braz.:*** Tequin; Zymar; ***Canad.:*** Tequin; Zymar; ***Chile:*** Starox†; Zymar; ***Ger.:*** Bonoq†; ***India:*** Biogat†; Gaticin; Gatiquin; Gatt; Zyquin; ***Indon.:*** Gaticin; Gatimax; ***Jpn:*** Gatiflo; ***Malaysia:*** Tequin†; ***Mex.:*** Tequin; Zymar; ***NZ:*** Tequin; ***Philipp.:*** Tequin; Zymar; ***S.Afr.:*** Tequin; ***Singapore:*** Tequin†; Zymar; ***Thai.:*** Tequin†; Zymar; ***USA:*** Tequin†; Zymar.

Multi-ingredient: ***India:*** Gatiquin Oz Kit.

Gemifloxacin Mesilate *(rINNM)*

Gemifloxacin Mesylate *(USAN)*; Gémifloxacine, Mésilate de; Gemifloxacini Mesilas; LB-20304 (gemifloxacin); LB-20304a; Mesilato de gemifloxacino; SB-265805 (gemifloxacin); SB-265805S. (±)-7-[3-(Aminomethyl)-4-oxo-1-pyrrolidinyl]-1-cyclopropyl-6-fluoro-1,4-dihydro-4-oxo-1,8-naphthyridine-3-carboxylic acid 7[4]-(*Z*)-(*O*-methyloxime) methanesulfonate.

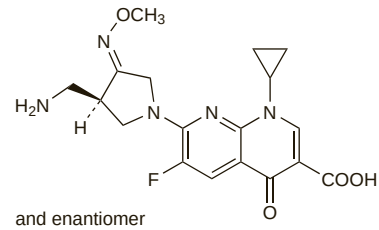
Гемифлоксацина Мезилат

$C_{18}H_{20}FN_5O_4,CH_4O_3S$ = 485.5.

CAS — 204519-64-2 (gemifloxacin); 204519-65-3 (gemifloxacin mesilate).

ATC — J01MA15.

ATC Vet — QJ01MA15.



and enantiomer

(gemifloxacin)

Adverse Effects and Precautions

As for Ciprofloxacin, p.244.

Skin rashes may be more common with gemifloxacin and treatment should be stopped if they occur.

Interactions

As for Ciprofloxacin, p.246.

Antimicrobial Action

As for Ciprofloxacin, p.246.

Gemifloxacin is reported to have greater activity against Gram-positive bacteria, including pneumococci, than ciprofloxacin.

◊ References.

1. Morrissey I, Tillotson G. Activity of gemifloxacin against Streptococcus pneumoniae and Haemophilus influenzae. *J Antimicrob Chemother* 2004; **53:** 144–8.

Pharmacokinetics

Gemifloxacin is rapidly absorbed from the gastrointestinal tract with an absolute bioavailability of about 71%. Peak plasma concentrations occur 0.5 to 2 hours after an oral dose. Gemifloxacin is widely distributed into body tissues including the bronchial