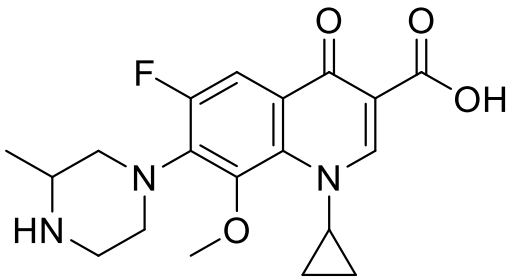
Product data sheet

MedKoo Cat#: 317966 Name: Gatifloxacin CAS#: 112811-59-3 (free base) Chemical Formula: $C_{19}H_{22}FN_3O_4$ Exact Mass: 375.15943 Molecular Weight: 375.4004	
Product supplied as:	Powder
Purity (by HPLC):	≥ 98%
Shipping conditions	Ambient temperature
Storage conditions:	Powder: -20°C 3 years; 4°C 2 years.
	In solvent: -80°C 3 months; -20°C 2 weeks.

1. Product description:

Gatifloxacin is an antibiotic of the fourth-generation fluoroquinolone family that inhibits the bacterial enzymes DNA gyrase and topoisomerase IV. Gatifloxacin is a fluoroquinolone antibiotic, with potent activity against Gram-negative and Gram-positive bacteria. Bristol-Myers Squibb introduced Gatifloxacin in 1999 under the proprietary name Tequin for the treatment of respiratory tract infections. Allergan produces it in eye-drop formulation under the names Zymar and Zymaxid. In many countries, gatifloxacin is also available as tablets and in various aqueous solutions for intravenous therapy.

2. CoA, QC data, SDS, and handling instruction

SDS and handling instruction, CoA with copies of QC data (NMR, HPLC and MS analytical spectra) can be downloaded from the product web page under "QC And Documents" section. Note: copies of analytical spectra may not be available if the product is being supplied by MedKoo partners. Whether the product was made by MedKoo or provided by its partners, the quality is 100% guaranteed.

3. Solubility data

Solvent	Max Conc. mg/mL	Max Conc. mM
DMF	10.0	26.64
DMF:PBS (pH 7.2) (1:1)	0.5	1.33
DMSO	3.33	8.88
Water	1.0	2.66

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	**1 mg**	**5 mg**	**10 mg**
1 mM	2.66 mL	13.32 mL	26.64 mL
5 mM	0.53 mL	2.66 mL	5.33 mL
10 mM	0.27 mL	1.33 mL	2.66 mL
50 mM	0.05 mL	0.27 mL	0.53 mL

5. Molarity Calculator, Reconstitution Calculator, Dilution Calculator

Please refer the product web page under section of "Calculator"

6. Recommended literature which reported protocols for in vitro and in vivo study

In vitro study

1. Takei M, Fukuda H, Yasue T, Hosaka M, Oomori Y. Inhibitory activities of gatifloxacin (AM-1155), a newly developed fluoroquinolone, against bacterial and mammalian type II topoisomerases. Antimicrob Agents Chemother. 1998 Oct;42(10):2678-81. doi: 10.1128/AAC.42.10.2678. PMID: 9756776; PMCID: PMC105918.
2. Fukuda H, Hori S, Hiramatsu K. Antibacterial activity of gatifloxacin (AM-1155, CG5501, BMS-206584), a newly developed fluoroquinolone, against sequentially acquired quinolone-resistant mutants and the norA transformant of Staphylococcus aureus. Antimicrob Agents Chemother. 1998 Aug;42(8):1917-22. doi: 10.1128/AAC.42.8.1917. PMID: 9687384; PMCID: PMC105710.

In vivo study

Product data sheet

1. Daw-Garza A, Welsh O, Said-Fernández S, Lozano-Garza HG, Waksman de Torres N, Rocha NC, Ocampo-Candiani J, Vera-Cabrera L. In vivo therapeutic effect of gatifloxacin on BALB/c mice infected with Nocardia brasiliensis. Antimicrob Agents Chemother. 2008 Apr;52(4):1549-50. doi: 10.1128/AAC.00148-08. Epub 2008 Feb 19. PMID: 18285484; PMCID: PMC2292517.
2. Ambrose PG, Forrest A, Craig WA, Rubino CM, Bhavnani SM, Drusano GL, Heine HS. Pharmacokinetics-pharmacodynamics of gatifloxacin in a lethal murine Bacillus anthracis inhalation infection model. Antimicrob Agents Chemother. 2007 Dec;51(12):4351-5. doi: 10.1128/AAC.00251-07. Epub 2007 Sep 17. PMID: 17875992; PMCID: PMC2167989.

7. Bioactivity

Biological target:

Gatifloxacin (AM-1155; BMS-206584; PD135432) is a potent fluoroquinolone antibiotic with broad-spectrum antibacterial activity. Gatifloxacin inhibits bacterial type II topoisomerases (IC_{50}=13.8 μg/ml for *S. aureus* topoisomerase IV) and *E. coli* DNA gyrase (IC_{50}=0.109 μg/ml).

In vitro activity

In this study, gatifloxacin showed a higher inhibitory activity against *S. aureus* topoisomerase IV (IC_{50} = 13.8 μg/ml) and *E. coli* DNA gyrase (IC_{50} = 0.109 μg/ml) than did the other quinolones tested, except for clinafloxacin and ciprofloxacin (Table 1).

Reference: Antimicrob Agents Chemother. 1998 Oct;42(10):2678-81. https://pubmed.ncbi.nlm.nih.gov/9756776/

In vivo activity

Gatifloxacin at 100 mg/kg maintained plasma levels over the MIC of *N. brasiliensis* HUJEG-1 (0.25 μg/ml) for more than 4 h, reaching a maximum concentration in serum of 18 μg/ml (Fig. 1). Linezolid at 25 mg/kg also kept concentrations above the MIC (0.12 μg/ml) for more than 4 h, with a maximum concentration in serum of 50 μg/ml. Given these results, this study decided to use gatifloxacin at 100 mg/kg three times daily, injected subcutaneously, and linezolid also three times per day at 25 mg/kg. In Fig. 2, the effect of gatifloxacin on the development of the lesions is shown. The animals showed a decrease in the number of lesions, comparable to the effect of linezolid.

Reference: Antimicrob Agents Chemother. 2008 Apr;52(4):1549-50. https://pubmed.ncbi.nlm.nih.gov/18285484/