

Product Data Sheet

Product Name: Orbifloxacin

Cat. No.: GC10164

Chemical Properties

Cas. No. 113617-63-3

Chemical Name 1-cyclopropyl-7-[(3S,5R)-3,5-dimethylpiperazin-1-yl]-5,6,8-trifluoro-4-oxoquinoline-3-carboxylic acid

SMILES CC1CN(CC(N1)C)C2=C(C3=C(C(=C2F)F)C(=O)C(=CN3C4CC4)C(=O)O)F

Formula $C_{19}H_{20}F_3N_3O_3$

M.Wt 395.38

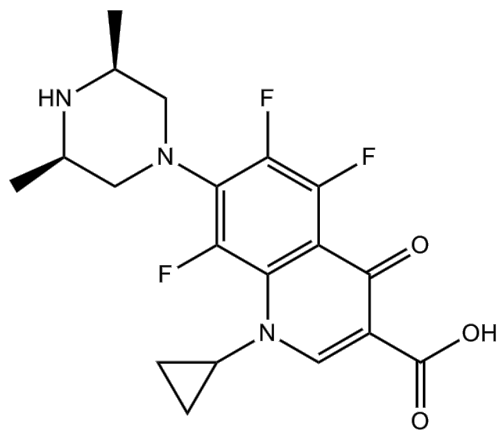
Solubility $\geq 6.7\text{mg/mL}$ in DMSO with gentle warming

Storage Store at 4°C

General tips For obtaining a higher solubility, please warm the tube at 37 °C and shake it in the ultrasonic bath for a while. Stock solution can be stored below -20°C for several months.

Shipping Condition Evaluation sample solution: ship with blue ice. All other available size: ship with RT, or blue ice upon request.

Structure



Protocol

Animal experiment [1]:

Animal models BALB/c mice

Caution: Product has not been fully validated for medical applications. For research use only.

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Preparation Method	Six-week-old, specific-pathogen-free (SPF) BALB/c mice of both sexes (18-20g) were housed in a temperature-controlled ($23\pm 2^{\circ}\text{C}$) room maintained on a 12/12h light/dark cycle. Neutropenia (neutrophil count; $\leq 100/\text{mm}^3$) was induced via intraperitoneal injection of cyclophosphamide at 150mg/kg four days and 100mg/kg one day prior to bacterial challenge. Mice were then inoculated with 0.1ml of an early logarithmic-phase <i>S. aureus</i> suspension (10^{6-7} cfu/ml) into the right posterior thigh muscle. Orbifloxacin treatment (20mg/kg; i.m.) was initiated 2h post-infection. After 24h of treatment, mice were euthanized, and the infected thighs were aseptically removed, homogenized, serially diluted, and plated quantification of bacterial burden.
Dosage form	20mg/kg for once; i.m.
Applications	Orbifloxacin treatment inhibited the bacterial load of <i>S. aureus</i> in a neutropenic murine thigh infection model.

References:

[1] Zhong L G, Tang S J, Liang L Y, et al. In vivo pharmacokinetic and pharmacodynamic profiles of orbifloxacin against *Staphylococcus aureus* in a neutropenic murine thigh infection model[J]. BMC Veterinary Research, 2025, 21(1): 531.

Background

Orbifloxacin is a synthetic fluoroquinolone with broad spectrum bactericidal activity [1]. Orbifloxacin exerts bactericidal activity by inhibiting bacterial DNA gyrase and topoisomerase IV, thereby disrupting DNA replication and bacterial proliferation [2]. Orbifloxacin accumulates in leukocytes, which allows it to act on intracellular bacteria and be transported to and liberated at the sites of infection [3]. Orbifloxacin is widely used for the treatment of gastrointestinal and respiratory infections in cattle and swine[4].

In vivo, Orbifloxacin treatment via intramuscular injection at a single dose of 20mg/kg can effectively inhibit the bacterial load of *Staphylococcus aureus* ATCC 29213 in a neutropenic murine thigh

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infection model within 24 hours^[5].

References:

- [1] Santos O M M, Freitas J T J, Bitencourt M, et al. Three new orbifloxacin multicomponent crystal forms towards pharmaceutical improvement[J]. Journal of Molecular Structure, 2020, 1217: 128371.
- [2] D'Atanasio N, Capezzone de Joannon A, Di Sante L, et al. Antibacterial activity of novel dual bacterial DNA type II topoisomerase inhibitors[J]. PLoS One, 2020, 15(2): e0228509.
- [3] Scott D W, Peters J, Miller Jr W H. Efficacy of orbifloxacin tablets for the treatment of superficial and deep pyoderma due to Staphylococcus intermedius infection in dogs[J]. The Canadian Veterinary Journal, 2006, 47(10): 999.
- [4] Marín P, Fernandez-Varon E, Escudero E, et al. Pharmacokinetic–pharmacodynamic integration of orbifloxacin in rabbits after intravenous, subcutaneous and intramuscular administration[J]. Journal of veterinary pharmacology and therapeutics, 2008, 31(1): 77-82.
- [5] Zhong L G, Tang S J, Liang L Y, et al. In vivo pharmacokinetic and pharmacodynamic profiles of orbifloxacin against Staphylococcus aureus in a neutropenic murine thigh infection model[J]. BMC Veterinary Research, 2025, 21(1): 531.

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