Ciprofloxacin hydrochloride

Cat. No.: HY-B0356A

CAS No.: 93107-08-5

Molecular Formula: $C_{17}H_{19}ClFN_3O_3$

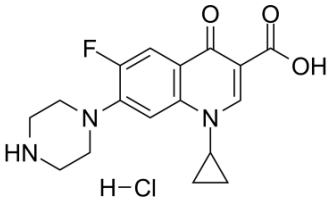
Molecular Weight: 367.8

Target: Bacterial; Antibiotic

Pathway: Anti-infection

Storage: 4°C, protect from light

* The compound is unstable in solutions, freshly prepared is recommended.



SOLVENT & SOLUBILITY

In Vitro

H_2O : 25 mg/mL (67.97 mM; Need ultrasonic)
DMSO : 5 mg/mL (13.59 mM; Need ultrasonic)

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	2.7189 mL	13.5943 mL	27.1887 mL
5 mM	0.5438 mL	2.7189 mL	5.4377 mL
10 mM	0.2719 mL	1.3594 mL	2.7189 mL

Please refer to the solubility information to select the appropriate solvent.

In Vivo

1. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 0.5 mg/mL (1.36 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 0.5 mg/mL (1.36 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Ciprofloxacin hydrochloride (Bay-09867 hydrochloride) is a fluoroquinolone antibiotic, exhibiting potent antibacterial activity.

IC_{50} & Target

Bacterial[1]

In Vitro

Ciprofloxacin hydrochloride (Bay-09867 (hydrochloride)) is a fluoroquinolone antibiotic, exhibiting potent antibacterial activity[1]. Ciprofloxacin hydrochloride (Bay-09867 (hydrochloride)) (CIP) shows potent activity against Y. pestis with MIC_{90} of 0.03 μg/mL[2].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

In Vivo	Ciprofloxacin hydrochloride (Bay-09867 (hydrochloride)) (1 mg/L) induces glutathione-S-transferase (GST) activity, in contrast with inhibited GST and Catalase (CAT) of larvae exposed to enrofloxacin. Ciprofloxacin hydrochloride (≥10 μg/L) is ecotoxic for development, growth, detoxifying, and oxidative stress enzymes in anuran amphibian larvae[1]. In a murine model of pneumonic plague, Ciprofloxacin hydrochloride (Bay-09867 (hydrochloride)) (30 mg/kg, i.p.) results in a drug exposure which is similar to the drug exposure observed in human following a 500 mg dose of oral Ciprofloxacin hydrochloride (Bay-09867 (hydrochloride)). Intraperitoneal Ciprofloxacin hydrochloride reduces the lung bacterial load compare to controls treated with intraperitoneal PBS[3]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

PROTOCOL

Cell Assay [2]	Bacterial inocula are prepared by suspending colonies into Mueller-Hinton broth (CAMHB) (containing Ciprofloxacin hydrochloride) from 18 to 24 h (B. anthracis) or 42 to 48 h (Y. pestis) on sheep blood agar (SBA) plates that are incubated at 35°C. Suspended cultures are diluted with CAMHB to a bacterial cell density of 10^5 CFU/mL adjusted based on the optical density at 600 nm. To each well of the 96-well plate, 50 μL of dilutions is added for a final inoculum of ~5×10^4 CFU/well. Plates are incubated at 35°C. MICs are determined visually at 18 to 24 h (B. anthracis) or 42 to 48 h (Y. pestis) and also by absorbance at 600 nm[2]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
Animal Administration [3]	Female BALB/cAnNCrl (BALB/c) mice, 8 to 10 weeks old and 20 g (±4 g) are used in this assay. A single dose of Ciprofloxacin hydrochloride (30 mg/kg) is administered to mice (n=30) via the intraperitoneal (i.p.) route. The mice (n=3/time point/group) are culled at 1, 10, 20, or 30 min and 1, 1.5, 2, 4, 8, 12 h following Ciprofloxacin hydrochloride (Bay-09867 (hydrochloride)) administration and 1, 15, or 30 min and 1, 2, 4, 6, 10, 18, or 24 h following DRCFI or CFI administration. Blood sampling points are chosen based upon the short half-life of Ciprofloxacin hydrochloride and longer half-life of CFI. Blood and lungs (whole organ) are collected post mortem for analysis. The lung doses following CFI or DRCFI administration are calculated using the concentration of Ciprofloxacin hydrochloride (Bay-09867 (hydrochloride)) in the lung samples at 1 min post-administration[3]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

CUSTOMER VALIDATION

- Adv Sci (Weinh). 2020 Jul 21;7(17):2001374.
- Chemosphere. 2019 Jun;225:378-387.
- J Antimicrob Chemother. 2020 Jul 1;75(7):1850-1858.
- Int J Antimicrob Agents. 2018 Aug;52(2):269-271.
- Research Square Preprint. 2020 Jun.

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REFERENCES

[1]. Peltzer PM, et al. Ecotoxicity of veterinary enrofloxacin and ciprofloxacin antibiotics on anuran amphibian larvae. Environ Toxicol Pharmacol. 2017 Feb 4. pii: S1382-6689(17)30029-7.

[2]. Steenbergen J, et al. In Vitro and In Vivo Activity of Omadacycline Against Two Biothreat Pathogens: Bacillus anthracis and Yersinia pestis. Antimicrob Agents Chemother. 2017 Feb 21.

[3]. Hamblin KA, et al. Inhaled Liposomal Ciprofloxacin Protects against a Lethal Infection in a Murine Model of Pneumonic Plague. Front Microbiol. 2017 Feb 6;8:91.

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