Product Data Sheet

Product Name: Ciprofloxacin hydrochloride monohydrate
Cat. No.: GC63671

Chemical Properties

Cas. No.	86393-32-0		
Formula	$C_{17}H_{21}ClFN_3O_4$	M.Wt	385.82
Solubility	DMSO : 5 mg/mL (12.96 mM□	Storage	Store at -20°C
General tips	For obtaining a higher solubility , please warm the tube at 37 ℃ and shake it in the ultrasonic bath for a while.Stock solution can be stored below -20℃ 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

Bacterial inocula are prepared by suspending colonies into Mueller-Hinton broth (CAMHB) (containing Ciprofloxacin (hydrochloride monohydrate)) 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 105 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 ~5×104 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].

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 monohydrate) (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 monohydrate) 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 monohydrate) 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

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concentration of Ciprofloxacin (hydrochloride monohydrate) in the lung samples at 1 min post-administration[3].

[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.

Background

Ciprofloxacin is a fluoroquinolone antibiotic.[1] It is active against a variety of Gram-positive and Gram-negative bacteria *in vitro*, including *S. aureus, L. monocytogenes, P. aeruginosa, Legionella, N. gonorrhoeae*, and *H. pylori* (MIC_{50}s = 0.004-1 ?g/ml).[2] It is also active against clinical isolates of *Bacteroides, Fusobacterium, Eubacterium, Actinomyces, Peptococcus, Peptostreptococcus*, and *Streptococcus in vitro* (MIC_{50}s = 0.5-2 ?g/ml).[3] Ciprofloxacin inhibits *S. aureus* DNA gyrase and topoisomerase IV (IC_{50}s = 13.5 and 5.76 ?g/ml, respectively).[4] It reduces mortality in mouse models of intraperitoneal *E. coli, P. vulgaris, K. pneumoniae, P. aeruginosa*, and *S. aureus* infection (ED_{90-100}s = 1-5, 2.5-5, 5-10, 20-40, and 80 mg/kg, respectively) and prevents mortality in a mouse model of subcutaneous *S. typhimurium* infection at 10 mg/kg.[5,6] Formulations containing ciprofloxacin have been used in the treatment of bacterial infections.

1.Drlica, K., and Zhao, X.DNA gyrase, topoisomerase IV, and the 4-quinolonesMicrobiol. Mol. Biol. Rev.61(3)377-392(1997) 2.Nilius, A.M., Shen, L.L., Hensey-Rudloff, D., et al.In vitro antibacterial potency and spectrum of ABT-492, a new fluoroquinoloneAntimicrob. Agents Chemother.47(10)3260-3269(2003) 3.Bansal, M.B., and Thadepalli, H.Activity of difloxacin (A-56619) and A-56620 against clinical anaerobic bacteria in vitroAntimicrob. Agents Chemother.31(4)619-621(1987) 4.Takei, M., Fukuda, H., Kishii, R., et al.Target preference of 15 quinolones against Staphylococcus aureus, based on antibacterial activities and target inhibitionAntimicrob. Agents Chemother.45(12)3544-3547(2001)

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5.Easmon, C.S.F., Crane, J.P., and Blowers, A.Effect of ciprofloxacin on intracellular organisms: In-vitro and in-vivo studiesJ. Antimicrob. Chemother.18 (Suppl D)43-48(1986)
6.Zeiler, H.J., and Grohe, K.The in vitro and in vivo activity of ciprofloxacinEur. J. Clin. Microbiol.3(4)339-343(1984)

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