Clindamycin hydrochloride

Cat. No.: HY-B0408A

CAS No.: 21462-39-5

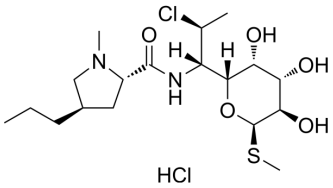
Molecular Formula: $C_{18}H_{34}Cl_2N_2O_5S$

Molecular Weight: 461

Target: Bacterial; Antibiotic

Pathway: Anti-infection

Storage: 4°C, sealed storage, away from moisture
* In solvent : -80°C, 6 months; -20°C, 1 month (sealed storage, away from moisture)



SOLVENT & SOLUBILITY

In Vitro

DMSO : ≥ 100 mg/mL (216.92 mM)
H_2O : ≥ 100 mg/mL (216.92 mM)
* "≥" means soluble, but saturation unknown.

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	2.1692 mL	10.8460 mL	21.6920 mL
5 mM	0.4338 mL	2.1692 mL	4.3384 mL
10 mM	0.2169 mL	1.0846 mL	2.1692 mL

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

In Vivo

1. Add each solvent one by one: PBS
   Solubility: 100 mg/mL (216.92 mM); Clear solution; Need ultrasonic
2. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 2.5 mg/mL (5.42 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.5 mg/mL (5.42 mM); Clear solution
4. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (5.42 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Clindamycin (hydrochloride) is a semisynthetic lincosamide antibiotic, which inhibits protein synthesis by acting on the 50S ribosomal.

In Vitro

Clindamycin is a classical inhibitor of bacterial protein synthesis, by binding to the 23S ribosomal RNA of the 50S ribosomal subunit[1].

	MCE has not independently confirmed the accuracy of these methods. They are for reference only.
In Vivo	Clindamycin hydrochloride results in fast absorption after oral administration in dogs, with a mean absorption time (MAT) of 0.87 hour, and bioavailability is 72.55%. Clindamycin hydrochloride results in total clearance (CL) of Clindamycin after both IV and oral administration (0.503 vs. 0.458 L/h/kg) in dogs. Clindamycin hydrochloride results in volume of distribution at steady-state (IV) at 2.48 L/kg, indicating a wide distribution of clindamycin in body fluids and tissues. Clindamycin serum concentrations after IV and oral administration remain above 0.5 μg/mL approximately for 10 hours[1]. Clindamycin hydrochloride significantly reduces oral malodor from the dogs' baseline levels through 42 days. Clindamycin hydrochloride also results in significant reductions in dental plaque, dental calculus, and gingival bleeding in dogs[2]. Clindamycin hydrochloride (2.5 mg/Lb), after ultrasonic scaling, root planing, and polishing (USRP), has a significant effect on plaque and pocket depth measures of periodontal disease but not on gingivitis in canine[3]. Clindamycin hydrochloride results in complete remission ratio of 71.4% (15/21) in dogs with canine superficial bacterial pyoderma after treat within 14 to 28 days[4]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

PROTOCOL

Animal Administration [1]	For the first experimental period, 11 mg/kg BW clindamycin hydrochloride are administered IV to all animals (Day 0), after catheterisation of the left cephalic vein. The catheters (18 G×51 mm Abbocath-T) are removed shortly after administration of the drug. Blood samples (3 mL) are collected into plastic tubes by aspiration from the catheterized lateral cephalic vein, prior to (t=0 h) and at 2, 5, 10, 15, 20, 30, 45 min, 1, 1.5, 2, 2.5, 3, 4, 5, 6, 8, 10, 12 and 24 h after administration. The intravenous catheters are flushed with 2 mL 1% heparinized normal saline after each sampling. On Day 28, all dogs receive one Antirobe capsule (150 mg clindamycin hydrochloride). Dose normalisation from mg/animal to mg/kg BW is carried out in each animal by dividing the total amount of clindamycin received, by its body weight. Blood sample collection is performed, following the technique described above, immediately before (t=0 h) and at 15, 30, 45 min, 1, 1.5, 2, 2.5, 3, 4, 5, 6, 8, 10, 12 and 24 h after drug administration. All blood samples are allowed to stand in a dark place for 20 min. After centrifugation at 1500 g for 10 min, at 4°C, the supernatant serum is transferred into 5-mL plastic tubes and is stored at −30°C, pending analysis. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

CUSTOMER VALIDATION

- Acta Pharm Sin B. 2021 Mar 11.
- Water Res. 2023 May 21, 120110.
- EBioMedicine. 2022 Apr;78:103943.
- ACS Omega. March 3, 2022.

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REFERENCES

[1]. Batzias GC, et al. Clindamycin bioavailability and pharmacokinetics following oral administration of clindamycin hydrochloride capsules in dogs. Vet J. 2005 Nov;170(3):339-45.

[2]. Warrick JM, et al. Effect of clindamycin hydrochloride on oral malodor, plaque, calculus, and gingivitis in dogs with periodontitis. Vet Ther. 2000 Winter;1(1):5-16.

[3]. Nielsen D, et al. Effects of treatment with clindamycin hydrochloride on progression of canine periodontal disease after ultrasonic scaling. Vet Ther. 2000 Summer;1(3):150-8.

[4]. Bloom PB, et al. Efficacy of once-daily clindamycin hydrochloride in the treatment of superficial bacterial pyoderma in dogs. J Am Anim Hosp Assoc. 2001 Nov-Dec;37(6):537-42.

Tel: 609-228-6898 Fax: 609-228-5909 E-mail: tech@MedChemExpress.com
Address: 1 Deer Park Dr, Suite Q, Monmouth Junction, NJ 08852, USA