Methacycline hydrochloride

Cat. No.: HY-B0449

CAS No.: 3963-95-9

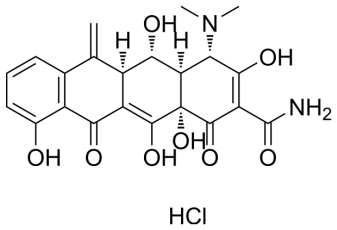
Molecular Formula: $C_{22}H_{23}ClN_2O_8$

Molecular Weight: 478.88

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)



HCl

SOLVENT & SOLUBILITY

In Vitro

DMSO : 50 mg/mL (104.41 mM; Need ultrasonic)
H_2O : 6.67 mg/mL (13.93 mM; Need ultrasonic)

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	2.0882 mL	10.4410 mL	20.8821 mL
5 mM	0.4176 mL	2.0882 mL	4.1764 mL
10 mM	0.2088 mL	1.0441 mL	2.0882 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: ≥ 2.5 mg/mL (5.22 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Methacycline hydrochloride is a tetracycline antibiotic and can inhibits bacterial protein synthesis. Methacycline hydrochloride is a potent epithelial-mesenchymal transition (EMT) inhibitor. Methacycline hydrochloride blocks EMT in vitro and fibrogenesis in vivo without directly affecting TGF-β1 Smad signaling. Methacycline hydrochloride is an antimicrobial and has the potential for pulmonary fibrosis[1].

IC_{50} & Target

Tetracycline

In Vitro

Methacycline hydrochloride is an inhibitor of A549 EMT with an IC50 of roughly 5 μM[1].
?In vitro, Methacycline hydrochloride (10, 20 μM; for 48 hours) inhibits TGF-β1-induced α-smooth muscle actin, Snail1, and collagen I of primary alveolar epithelial cells. Methacycline hydrochloride inhibits TGF-β1–induced non-Smad pathways, including c-Jun N-terminal kinase, p38, and Akt activation, but not Smad or β-catenin transcriptional activity. Methacycline has no effect on baseline c-Jun N-terminal kinase, p38, or Akt activities or lung fibroblast responses to TGF-β1[1].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

In Vivo	In vivo, Methacycline hydrochloride (100 mg/kg/day; ip; beginning 10 days after intratracheal Bleomycin) improves survival at Day 17. Bleomycin-induced canonical EMT markers, Snail1, Twist1, collagen I, as well as fibronectin protein and mRNA, ARE attenuated by Methacycline hydrochloride (Day 17)[1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

CUSTOMER VALIDATION

- EBioMedicine. 2022 Apr;78:103943.
- SLAS Discov. 2020 Sep;25(8):895-905.

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REFERENCES

[1]. Ying Xi, et al. Inhibition of epithelial-to-mesenchymal transition and pulmonary fibrosis by methacycline. Am J Respir Cell Mol Biol. 2014 Jan;50(1):51-60.

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