Cefaclor monohydrate

Cat. No.: HY-B0198A

CAS No.: 70356-03-5

Molecular Formula: $C_{15}H_{16}ClN_3O_5S$

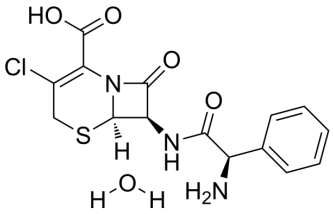
Molecular Weight: 385.82

Target: Bacterial; Antibiotic; Penicillin-binding protein (PBP); 5-HT Receptor

Pathway: Anti-infection; GPCR/G Protein; Neuronal Signaling

Storage:

Powder	-20°C	3 years
In solvent	-80°C	6 months
	-20°C	1 month



BIOLOGICAL ACTIVITY

Description

Cefaclor is a well-absorbed orally active cephalosporin antibiotic. Cefaclor can specifically bind to specific for penicillin-binding protein 3 (PBP3). Cefaclor can be used for the research of depression and kinds of infections caused by bacteria, such as respiratory tract infections, bacterial bronchitis, pharyngitis and skin infections[1][2][3][4].

IC_{50} & Target

β-lactam	5-HT Receptor	hOAT1	hPepT1-□□□□□□□ 1
hPepT2-□□□□□□□ 2	CD63	BDNF	

In Vitro

Cefaclor (0-500 μg/mL, 12-24 h) shows obvious antibacterial activity against 556 Gram-positive and Gram-negative isolates. The MIC values of most strains are lower than 3.1 μg/mL, and the MIC value of Staph. aureus is 1 μg/mL in vitro[4].

Cefaclor (60/500 μM, 30 min) is mainly transported by hPepT2 and hPepT1 in the MDCK stably transduced cell line overexpressing hOAT1□hPepT1 and hPepT2[2].

Cefaclor (0.16 mg/mL, 30 min) can induce allergic reactions by directly activating basophils and mast cells[3].

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

In Vivo

Cefaclor (200 mg/kg/day, p.o. once a day for 5 days) can cause intestinal flora imbalance in mice, as well as anxiety and depression-like behaviors in mice. These symptoms can be alleviated by Fluoxetine (HY-B0102) or vagotomy[1].

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

Animal Model:	C57BL/6J mice (male, 5 weeks old)[1]
Dosage:	200 mg/kg/day, once a day for 5 days.
Administration:	p.o.
Result:	Significantly decreased serotonin levels in the hippocampus and BDNF in mice. Cefaclor-induced gut dysbiosis caused anxiety and depression through the microbiota-gut-blood–brain and the microbiota-gut-vagus nerve-brain pathway.

CUSTOMER VALIDATION

- Nat Commun. 2023 Mar 22;14(1):1594.

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REFERENCES

[1]. ⊠⊠1 ⊠Joo MK, et al. Cefaclor causes vagus nerve-mediated depression-like symptoms with gut dysbiosis in mice. Sci Rep. 2023 Sep 19;13(1):15529.

[2]. Li M, et al. Interactions of amoxicillin and cefaclor with human renal organic anion and peptide transporters. Drug Metab Dispos. 2006 Apr;34(4):547-55.

[3]. Yoo HS, et al. Immunologic evaluation of immediate hypersensitivity to cefaclor. Yonsei Med J. 2014 Nov;55(6):1473-83.

[4]. Neu HC, et al. Cefaclor: in vitro spectrum of activity and beta-lactamase stability. Antimicrob Agents Chemother. 1978 Apr;13(4):584-8.

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

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