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Lieferung & Zahlungsart

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Zuschläge

- Mindermengenzuschlag
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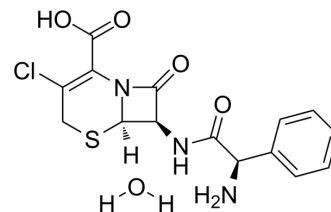
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Cefaclor monohydrate

Cat. No.:	HY-B0198A		
CAS No.:	70356-03-5		
Molecular Formula:	C ₁₅ H ₁₆ ClN ₃ O ₅ S		
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



SOLVENT & SOLUBILITY

In Vitro

DMSO : 5.83 mg/mL (15.11 mM; ultrasonic and warming and heat to 60°C)

Concentration	Mass		
	1 mg	5 mg	10 mg
1 mM	2.5919 mL	12.9594 mL	25.9188 mL
5 mM	0.5184 mL	2.5919 mL	5.1838 mL
10 mM	0.2592 mL	1.2959 mL	2.5919 mL

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

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]}.

IC₅₀ & Target

β-lactam	5-HT Receptor	hOAT1	hPepT1-human peptide transporter 1
hPepT2-human peptide transporter 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]. 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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