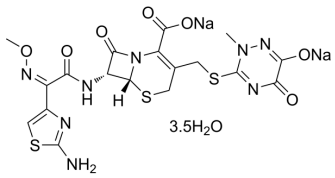
Ceftriaxone sodium hydrate

Cat. No.:	HY-B0712A
CAS No.:	104376-79-6
Molecular Formula:	$C_{18}H_{23}N_8Na_2O_{10.5}S_3$
Molecular Weight:	661.6
Target:	Bacterial; Antibiotic; GSK-3; Aurora Kinase
Pathway:	Anti-infection; PI3K/Akt/mTOR; Stem Cell/Wnt; Cell Cycle/DNA Damage; Epigenetics
Storage:	4°C, stored under nitrogen, away from moisture * In solvent : -80°C, 6 months; -20°C, 1 month (stored under nitrogen, away from moisture)



SOLVENT & SOLUBILITY

In Vitro

DMSO : 100 mg/mL (151.15 mM; Need ultrasonic)

Preparing Stock Solutions	Solvent / Mass / Concentration	1 mg	5 mg	10 mg
	1 mM	1.5115 mL	7.5574 mL	15.1149 mL
	5 mM	0.3023 mL	1.5115 mL	3.0230 mL
	10 mM	0.1511 mL	0.7557 mL	1.5115 mL

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

BIOLOGICAL ACTIVITY

Description

Ceftriaxone sodium hydrate (Ro 13-9904 sodium hydrate) is a broad spectrum β-lactam third-generation cephalosporin antibiotic, which has good antibacterial activity against a variety of gram-negative and positive bacteria. Ceftriaxone sodium hydrate is a covalent inhibitor of GSK3β with IC_{50} value of 0.78 μM. Ceftriaxone sodium hydrate is an inhibitor of Aurora B. Ceftriaxone sodium hydrate has anti-inflammatory, antitumor and antioxidant activities. Ceftriaxone sodium hydrate can be used in the study of bacterial infections and meningitis[1][2][3][4][5][6][7].

IC_{50} & Target

β-lactam

In Vitro

Ceftriaxone sodium hydrate (100 μM, 24 h) protects MPP^+ treated astrocytes by inhibiting the NF-κB/JNK/c-Jun signaling pathway [3].

Ceftriaxone sodium hydrate (500 μM, 24-48 h) effectively inhibits unanchored cell growth in A549, H520 and H1650 lung cancer cells by inhibiting Aurora B[4].

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

Cell Viability Assay[3]

Cell Line:	Astrocyte
Concentration:	100 μM
Incubation Time:	24 h
Result:	Improved cell viability and increased glutamate uptake after MPP^+ expose.

Western Blot Analysis[3]

Cell Line:	Astrocyte
Concentration:	100 μM
Incubation Time:	24 h
Result:	Enhanced GLT-1 and GFAP expression. Decreased the expression of p-p50、p-IKKα、p-Relb. Decreased the number of TUNEL-positive cells.

In Vivo

Ceftriaxone sodium hydrate (200 mg/kg Intraperitoneal injection for 6 weeks) improves functional markers and oxidative stress and inflammation parameters in a rat model of D-galactose (DGL) -induced liver and kidney injury[5].
Ceftriaxone sodium hydrate (200, 400 mg/kg, Intraperitoneal injection) has a protective effect on convulsion induced by Pentylenetetrazol (PTZ) and PTZ-related oxidative damage in rats[6].
Ceftriaxone sodium hydrate (100, 200 mg/kg, Intraperitoneal injection) reduces mechanical dysodynia and hyperalgesia by activating GLT-1 in Streptozocin (HY-13753)-induced diabetic rat models[7].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Animal Model:	DGL-induced rat model[5]
Dosage:	200 mg/kg
Administration:	i.p.
Result:	Reduced the BUN、Cr 、AST and ALT levels. Attenuated the MDA levels and enhanced GPx and CAT activities. Reduced the levels of IL-1β and TNF-α mRNA.

Animal Model:	PTZ-induced rat model[6]
Dosage:	200, 400 mg/kg
Administration:	i.p. 60 min before to PTZ (70 mg/kg)
Result:	Both of the two ceftriaxone groups had lower spike percentages than the saline group. Significantly lower MDA levels and higher SOD activity in 200 and 400 mg/kg.

CUSTOMER VALIDATION

- Nat Commun. 2022 Mar 2;13(1):1116.
- Emerg Microbes Infect. 2024 Dec;13(1):2321981.

- EBioMedicine. 2022 Apr;78:103943.
- Chemosphere. 2023 Oct 3:344:140353.

See more customer validations on www.MedChemExpress.com

REFERENCES

[1]. Nahata MC, et al. Ceftriaxone: a third-generation cephalosporin. Drug Intell Clin Pharm. 1985 Dec;19(12):900-6.

[2]. Nassar H, et al. Molecular docking, molecular dynamics simulations and in vitro screening reveal cefixime and ceftriaxone as GSK3β covalent inhibitors. RSC Adv. 2023 Apr 11;13(17):11278-11290.

[3]. Zhang Y, et al. Ceftriaxone Protects Astrocytes from MPP(+) via Suppression of NF-κB/JNK/c-Jun Signaling. Mol Neurobiol. 2015 Aug;52(1):78-92.

[4]. Li X, et al. Ceftriaxone, an FDA-approved cephalosporin antibiotic, suppresses lung cancer growth by targeting Aurora B. Carcinogenesis. 2012 Dec;33(12):2548-57.

[5]. Hakimizadeh E, et al. Ceftriaxone improves hepatorenal damages in mice subjected to D-galactose-induced aging. Life Sci. 2020 Oct 1;258:118119.

[6]. Uyanikgil Y, et al. Positive effects of ceftriaxone on pentylenetetrazol-induced convulsion model in rats. Int J Neurosci. 2016;126(1):70-5.

[7]. Gunduz O, et al. Anti-allodynic and anti-hyperalgesic effects of ceftriaxone in streptozocin-induced diabetic rats. Neurosci Lett. 2011 Mar 10;491(1):23-5.

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