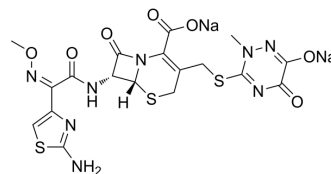


Ceftriaxone sodium salt

Cat. No.:	HY-B0712B
CAS No.:	74578-69-1
Molecular Formula:	C ₁₈ H ₁₆ N ₈ Na ₂ O ₇ S ₃
Molecular Weight:	598.54
Target:	Antibiotic; GSK-3; Bacterial; Aurora Kinase
Pathway:	Anti-infection; PI3K/Akt/mTOR; Stem Cell/Wnt; Cell Cycle/DNA Damage; Epigenetics
Storage:	4°C, sealed storage, away from moisture and light * In solvent : -80°C, 1 year; -20°C, 6 months (sealed storage, away from moisture and light)



SOLVENT & SOLUBILITY

In Vitro

DMSO : 50 mg/mL (83.54 mM; Need ultrasonic)
 H₂O : ≥ 40 mg/mL (66.83 mM)
 * "≥" means soluble, but saturation unknown.

	Solvent Concentration	Mass		
		1 mg	5 mg	10 mg
Preparing Stock Solutions	1 mM	1.6707 mL	8.3537 mL	16.7073 mL
	5 mM	0.3341 mL	1.6707 mL	3.3415 mL
	10 mM	0.1671 mL	0.8354 mL	1.6707 mL

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

In Vivo

- Add each solvent one by one: PBS
Solubility: 100 mg/mL (167.07 mM); Clear solution; Need ultrasonic
- Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
Solubility: ≥ 2.5 mg/mL (4.18 mM); Clear solution
- Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
Solubility: ≥ 2.5 mg/mL (4.18 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Ceftriaxone sodium salt (Ro 13-9904) 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 salt is a covalent inhibitor of GSK3β with IC₅₀ value of 0.78 μM. Ceftriaxone sodium salt is an inhibitor of Aurora B. Ceftriaxone sodium salt has anti-inflammatory, antitumor and antioxidant activities. Ceftriaxone sodium salt 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	<p>Ceftriaxone sodium salt (100 μM, 24 h) protects MPP⁺ treated astrocytes by inhibiting the NF-κB/JNK/c-Jun signaling pathway [3].</p> <p>Ceftriaxone sodium salt (500 μM, 24-48 h) effectively inhibits unanchored cell growth in A549, H520 and H1650 lung cancer cells by inhibiting Aurora B^[4].</p> <p>MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p> <p>Cell Viability Assay^[3]</p>		
	<table border="1"> <tr> <td>Cell Line:</td> <td>Astrocyte</td> </tr> </table>	Cell Line:	Astrocyte
	Cell Line:	Astrocyte	
	<table border="1"> <tr> <td>Concentration:</td> <td>100 μM</td> </tr> </table>	Concentration:	100 μM
	Concentration:	100 μM	
	<table border="1"> <tr> <td>Incubation Time:</td> <td>24 h</td> </tr> </table>	Incubation Time:	24 h
	Incubation Time:	24 h	
	<table border="1"> <tr> <td>Result:</td> <td>Improved cell viability and increased glutamate uptake after MPP⁺ expose.</td> </tr> </table>	Result:	Improved cell viability and increased glutamate uptake after MPP ⁺ expose.
	Result:	Improved cell viability and increased glutamate uptake after MPP ⁺ expose.	
	<p>Western Blot Analysis^[3]</p>		
<table border="1"> <tr> <td>Cell Line:</td> <td>Astrocyte</td> </tr> </table>	Cell Line:	Astrocyte	
Cell Line:	Astrocyte		
<table border="1"> <tr> <td>Concentration:</td> <td>100 μM</td> </tr> </table>	Concentration:	100 μM	
Concentration:	100 μM		
<table border="1"> <tr> <td>Incubation Time:</td> <td>24 h</td> </tr> </table>	Incubation Time:	24 h	
Incubation Time:	24 h		
<table border="1"> <tr> <td>Result:</td> <td>Enhanced GLT-1 and GFAP expression. Decreased the expression of p-p50/p-IKKα/p-Relb. Decreased the number of TUNEL-positive cells.</td> </tr> </table>	Result:	Enhanced GLT-1 and GFAP expression. Decreased the expression of p-p50/p-IKKα/p-Relb. Decreased the number of TUNEL-positive cells.	
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	<p>Ceftriaxone sodium salt (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].</p> <p>Ceftriaxone sodium salt (200, 400 mg/kg, Intraperitoneal injection) has a protective effect on convulsion induced by Pentylentetrazol (PTZ) and PTZ-related oxidative damage in rats^[6].</p> <p>Ceftriaxone sodium salt (100, 200 mg/kg, Intraperitoneal injection) reduces mechanical dysodynia and hyperalgesia by activating GLT-1 in streptozotocin (HY-13753)-induced diabetic rat models^[7].</p> <p>MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p>		
	<table border="1"> <tr> <td>Animal Model:</td> <td>DGL-induced rat model^[5]</td> </tr> </table>	Animal Model:	DGL-induced rat model ^[5]
	Animal Model:	DGL-induced rat model ^[5]	
	<table border="1"> <tr> <td>Dosage:</td> <td>200 mg/kg</td> </tr> </table>	Dosage:	200 mg/kg
	Dosage:	200 mg/kg	
	<table border="1"> <tr> <td>Administration:</td> <td>i.p.</td> </tr> </table>	Administration:	i.p.
	Administration:	i.p.	
	<table border="1"> <tr> <td>Result:</td> <td>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.</td> </tr> </table>	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.
	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.	
	<table border="1"> <tr> <td>Animal Model:</td> <td>PTZ-induced rat model^[6]</td> </tr> </table>	Animal Model:	PTZ-induced rat model ^[6]
Animal Model:	PTZ-induced rat model ^[6]		
<table border="1"> <tr> <td>Dosage:</td> <td>200, 400 mg/kg</td> </tr> </table>	Dosage:	200, 400 mg/kg	
Dosage:	200, 400 mg/kg		
<table border="1"> <tr> <td>Administration:</td> <td>i.p. 60 min before to PTZ (70 mg/kg)</td> </tr> </table>	Administration:	i.p. 60 min before to PTZ (70 mg/kg)	
Administration:	i.p. 60 min before to PTZ (70 mg/kg)		
<table border="1"> <tr> <td>Result:</td> <td>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.</td> </tr> </table>	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.	
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 GSK3 β 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- κ B/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]. Hakimzadeh 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.

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

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