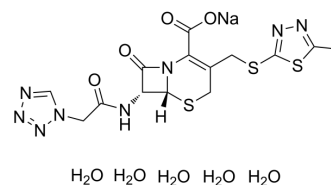


Cefazolin sodium pentahydrate

Cat. No.:	HY-B0756
CAS No.:	115850-11-8
Molecular Formula:	C ₁₄ H ₂₃ N ₈ NaO ₉ S ₃
Molecular Weight:	566.57
Target:	Antibiotic; Bacterial
Pathway:	Anti-infection
Storage:	Please store the product under the recommended conditions in the Certificate of Analysis.



BIOLOGICAL ACTIVITY

Description	Cefazolin sodium pentahydrate is a first-generation cephalosporin antibiotic and can be used in varieties of bacterial infections research ^[1] . Cefazolin sodium pentahydrate has anti-inflammatory effect and can attenuate post-operative cognitive dysfunction (POCD) ^[2] .																
IC₅₀ & Target	β-lactam																
In Vitro	<p>Cefazolin sodium pentahydrate (0-300 μg/ml; 6 or 24 h) has a direct anti-inflammatory effect on C8-B4 cells stimulated by lipopolysaccharide^[2].</p> <p>Cefazolin sodium pentahydrate (0-400 μM; 72 h) treatment inhibits IL-2, IL-4 and IL-15-induced cell proliferation^[3].</p> <p>Cefazolin sodium pentahydrate (0-400 μM; 30 min) treatment inhibits IL-2, IL-4, IL-15 and IL-21-stimulated JAK3 phosphorylation^[3].</p> <p>MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p> <p>Cell Viability Assay^[2]</p> <table border="1"> <tr> <td>Cell Line:</td> <td>C8-B4 cells</td> </tr> <tr> <td>Concentration:</td> <td>0, 50, 100, 150, 200, 250, or 300 μg/ml</td> </tr> <tr> <td>Incubation Time:</td> <td>6 or 24 hours</td> </tr> <tr> <td>Result:</td> <td>Inhibited the increase of IL-1β at all doses, but inhibited the increase of IL-6 only at 200 μg/ml.</td> </tr> </table> <p>Cell Proliferation Assay^[3]</p> <table border="1"> <tr> <td>Cell Line:</td> <td>PBMC, and TF-1 cells</td> </tr> <tr> <td>Concentration:</td> <td>0, 100, 200, and 400 μM</td> </tr> <tr> <td>Incubation Time:</td> <td>72 hours</td> </tr> <tr> <td>Result:</td> <td>Reduced IL-2, IL-4 and IL-15-induced cell proliferation, suggested that Cefazolin interferes not only with IL-15Rα, but also with IL-2/IL-15Rβ and/or γ_C.</td> </tr> </table> <p>Western Blot Analysis^[3]</p>	Cell Line:	C8-B4 cells	Concentration:	0, 50, 100, 150, 200, 250, or 300 μg/ml	Incubation Time:	6 or 24 hours	Result:	Inhibited the increase of IL-1β at all doses, but inhibited the increase of IL-6 only at 200 μg/ml.	Cell Line:	PBMC, and TF-1 cells	Concentration:	0, 100, 200, and 400 μM	Incubation Time:	72 hours	Result:	Reduced IL-2, IL-4 and IL-15-induced cell proliferation, suggested that Cefazolin interferes not only with IL-15Rα, but also with IL-2/IL-15Rβ and/or γ _C .
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Cell Line:	PBMC, NK-92, and TF-1 cells
Concentration:	0, 100, 200, and 400 μ M
Incubation Time:	30 min
Result:	Diminished the phosphorylation of JAK3 in response to the cytokine treatment, concluded suppressing signal transduction by γ_c receptors.

In Vivo

Cefazolin sodium pentahydrate (Subcutaneous injection; 300-500 mg/kg; once daily; 5 d) treatment improves learning and memory in mice after surgery^[2].

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Animal Model:	6- to 8-week-old male CD-1 mice underwent clinical exploratory laparotomy ^[2]
Dosage:	300-500 mg/kg
Administration:	Subcutaneous injection; 300-500 mg/kg; once daily; 5 days
Result:	Attenuated learning and memory dysfunction induced by the surgery.

CUSTOMER VALIDATION

- Nat Commun. 2022 Mar 2;13(1):1116.
- iScience. 5 January 2022, 103731.
- Front Aging Neurosci. 2021 Oct 13;13:748637.
- ACS Omega. March 3, 2022.

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REFERENCES

[1]. R Quintiliani, et al. Cefazolin. Ann Intern Med. 1978 Nov;89(5 Pt 1):650-6.

[2]. Peng Liang, et al. Perioperative use of cefazolin ameliorates postoperative cognitive dysfunction but induces gut inflammation in mice. J Neuroinflammation. 2018 Aug 22;15(1):235.

[3]. Barbara Źyżyńska-Granica, et al. The anti-inflammatory potential of cefazolin as common gamma chain cytokine inhibitor. Sci Rep. 2020 Feb 19;10(1):2886.

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

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