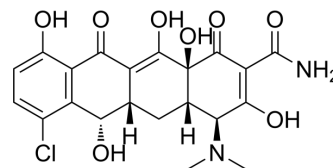


## Demeclocycline

Cat. No.:	HY-121268		
CAS No.:	127-33-3		
Molecular Formula:	C <sub>21</sub> H <sub>21</sub> ClN <sub>2</sub> O <sub>8</sub>		
Molecular Weight:	464.85		
Target:	Antibiotic; Bacterial		
Pathway:	Anti-infection		
Storage:	Powder	-20°C	3 years
	In solvent	-80°C	6 months
		-20°C	1 month



### SOLVENT & SOLUBILITY

#### In Vitro

H<sub>2</sub>O : 40 mg/mL (86.05 mM; Need ultrasonic)  
 DMSO : 25 mg/mL (53.78 mM; Need ultrasonic)

Preparing Stock Solutions	Solvent Concentration	Mass		
		1 mg	5 mg	10 mg
	1 mM	2.1512 mL	10.7562 mL	21.5123 mL
	5 mM	0.4302 mL	2.1512 mL	4.3025 mL
	10 mM	0.2151 mL	1.0756 mL	2.1512 mL

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

#### In Vivo

- Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline  
 Solubility: ≥ 1.25 mg/mL (2.69 mM); Clear solution
- Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)  
 Solubility: ≥ 1.25 mg/mL (2.69 mM); Clear solution

### BIOLOGICAL ACTIVITY

#### Description

Demeclocycline is an orally active tetracycline antibiotic. Demeclocycline impairs protein synthesis by binding to the 30S ribosomal subunit to inhibit binding of aminoacyl tRNA. Demeclocycline shows anti-bacterial activity to a wide variety of bacterial infections<sup>[1][2]</sup>.

#### IC<sub>50</sub> & Target

Tetracycline

#### In Vitro

Demeclocycline (0-100 μM; 24 h) treatment reduces AQP2 abundance in mpkCCD cells<sup>[3]</sup>.  
 Demeclocycline (10 μM; 24 h) treatment promotes the activity of monocytes and macrophages<sup>[4]</sup>.  
 Demeclocycline (1-10 μM; 72 h) treatment directly affects the growth of brain tumor initiating cells<sup>[4]</sup>.  
 MCE has not independently confirmed the accuracy of these methods. They are for reference only.

### Western Blot Analysis<sup>[3]</sup>

Cell Line:	MpkCCD cells
Concentration:	0-100 $\mu$ M
Incubation Time:	24 hours
Result:	Decreased AQP2 abundance in mpkCCD cells, with significant effects at 50 $\mu$ M.

### Cell Viability Assay<sup>[4]</sup>

Cell Line:	mouse bone marrow derived macrophages and monocytes
Concentration:	10 $\mu$ M
Incubation Time:	24 hours
Result:	Enhanced TNF- $\alpha$ production and modulated monocyte functions.

### Cell Viability Assay<sup>[4]</sup>

Cell Line:	brain tumorinitiating cells
Concentration:	1, 5, and 10 $\mu$ M
Incubation Time:	72 hours
Result:	Inhibited cells growth in two ways: using monocytes as an intermediary, and directly by affecting the proliferation and sphere-forming capacity of brain tumorinitiating cells.

### In Vivo

Demeclocycline (Intraperitoneal injection; 40 mg/kg; once daily; 48 h) treatment results in a significant reduction of hyponatremia and a significant correction of the hypoosmolality, and is not nephrotoxic<sup>[3]</sup>.

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

Animal Model:	Male Wistar rats induced with hyponatremia <sup>[3]</sup>
Dosage:	40 mg/kg
Administration:	Intraperitoneal injection; 40 mg/kg; once daily; 48 hours
Result:	Increased urine volume, decreased urine osmolality, and caused a significantly increased fractional excretion of water.

Animal Model:	Male Wistar rats induced with hyponatremia <sup>[3]</sup>
Dosage:	40 mg/kg
Administration:	Intraperitoneal injection; 40 mg/kg; once daily; 48 hours
Result:	Indicated the effect in the renal inner medulla for AQP2 and AC5/6 specifically, and not secondary toxicity effect.

- Mol Syst Biol. 2022 Sep;18(9):e11081.
- Chemosphere. 2019 Jun;225:378-387.
- J Photoch Photobio A. 2020 May.
- Patent. US20230014181.

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## REFERENCES

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- [1]. I Chopra, et al. Tetracyclines, molecular and clinical aspects. J Antimicrob Chemother. 1992 Mar;29(3):245-77.
- [2]. D Schnappinger, et al. Tetracyclines: antibiotic action, uptake, and resistance mechanisms. Arch Microbiol. 1996 Jun;165(6):359-69.
- [3]. Marleen L A Kortenoeven, et al. Demeclocycline attenuates hyponatremia by reducing aquaporin-2 expression in the renal inner medulla. Am J Physiol Renal Physiol. 2013 Dec 15;305(12):F1705-18.
- [4]. Susobhan Sarkar, et al. Demeclocycline Reduces the Growth of Human Brain Tumor-Initiating Cells: Direct Activity and Through Monocytes. Front Immunol. 2020 Feb 21;11:272.
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**Caution: Product has not been fully validated for medical applications. For research use only.**

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