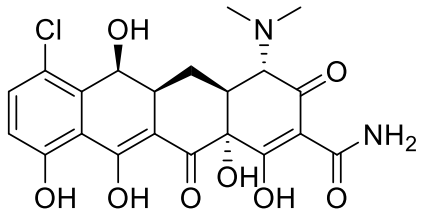
Product data sheet

MedKoo Cat#: 317589 Name: Demeclocycline CAS#: 127-33-3 (free base) Chemical Formula: $C_{21}H_{21}ClN_2O_8$ Exact Mass: 464.09864 Molecular Weight: 464.85	
Product supplied as:	Powder
Purity (by HPLC):	≥ 98%
Shipping conditions	Ambient temperature
Storage conditions:	Powder: -20°C 3 years; 4°C 2 years.
	In solvent: -80°C 3 months; -20°C 2 weeks.

1. Product description:
Demeclocycline (INN, BAN) (brand names Declomycin, Declostatin, Ledermycin, Bioterciclin, Deganol, Deteclo), also known as demeclocycline hydrochloride (USAN) (brand names Detravis, Meciclin, Mexocine, Clortetrin), is a semisynthetic tetracycline antibiotic which was derived from a strain of Streptomyces aureofaciens. Demeclocycline binds to bacterial 30S ribosomal subunit and prevents binding of aminoacyl-tRNA to the mRNA-ribosome complex, thereby inhibiting protein synthesis. Demeclocycline also inhibits the effect of vasopressin on the renal tubules, thereby causing diuresis.
(Source:https://en.wikipedia.org/wiki/Demeclocycline).

2. CoA, QC data, SDS, and handling instruction
SDS and handling instruction, CoA with copies of QC data (NMR, HPLC and MS analytical spectra) can be downloaded from the product web page under "QC And Documents" section. Note: copies of analytical spectra may not be available if the product is being supplied by MedKoo partners. Whether the product was made by MedKoo or provided by its partners, the quality is 100% guaranteed.

3. Solubility data

Solvent	Max Conc. mg/mL	Max Conc. mM
H2O	1.50	3.23

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	2.15 mL	10.76 mL	21.51 mL
5 mM	0.43 mL	2.15 mL	4.30 mL
10 mM	0.22 mL	1.08 mL	2.15 mL
50 mM	0.04 mL	0.22 mL	0.43 mL

5. Molarity Calculator, Reconstitution Calculator, Dilution Calculator
Please refer the product web page under section of "Calculator"

6. Recommended literature which reported protocols for in vitro and in vivo study
In vitro study

1. Kortenoeven ML, Sinke AP, Hadrup N, Trimpert C, Wetzels JF, Fenton RA, Deen PM. 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. doi: 10.1152/ajprenal.00723.2012. Epub 2013 Oct 23. PMID: 24154696.
2. Sarkar S, Li Y, Mirzaei R, Rawji KS, Poon CC, Wang J, Kumar M, Bose P, Yong VW. Demeclocycline Reduces the Growth of Human Brain Tumor-Initiating Cells: Direct Activity and Through Monocytes. Front Immunol. 2020 Feb 21;11:272. doi: 10.3389/fimmu.2020.00272. PMID: 32153581; PMCID: PMC7047330.

In vivo study

1. Jiang SX, Lertvorachon J, Hou ST, Konishi Y, Webster J, Mealing G, Brunette E, Tauskela J, Preston E. Chlortetracycline and demeclocycline inhibit calpains and protect mouse neurons against glutamate toxicity and cerebral ischemia. J Biol Chem. 2005 Oct 7;280(40):33811-8. doi: 10.1074/jbc.M503113200. Epub 2005 Aug 9. PMID: 16091365.

2. Kortenoeven ML, Sinke AP, Hadrup N, Trimpert C, Wetzels JF, Fenton RA, Deen PM. 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. doi: 10.1152/ajprenal.00723.2012. Epub 2013 Oct 23. PMID: 24154696.

7. Bioactivity

Biological target:

Demeclocycline is a tetracycline antibiotic used to treat a wide variety of susceptible bacterial infections.

In vitro activity

Because earlier results suggest that demeclocycline alone reduced BTIC growth, it was sought to investigate its direct role further. BTICs were subjected to different concentrations of demeclocycline and found that 5 and 10 μM decreased sphere formation and cell number (Figures 3A,B). Notably, demeclocycline at 10 μM concentration had selective efficacy on BTICs as it was without obvious toxicity to non-transformed CNS cells such as microtubule associated protein-2 (MAP-2) labeled neurons (Figures 3D,E). As the above experiments involved the treatment of freshly dissociated BTIC lines with demeclocycline to determine whether the medication reduced sphere formation and other indices of BTIC growth, it was next addressed whether demeclocycline affected BTIC spheres that were already well-formed. It was found that when demeclocycline (10 μM) was added to growing spheres 3 days after their formation from singly dissociated cells, the drug still reduced the further growth of spheres of the BT025 and BT048 lines (Figures 3F–H). Overall, the results suggest that demeclocycline can control BTIC growth in two ways: using monocytes as an intermediary, and directly by affecting the proliferation and sphere-forming capacity of BTICs.

Reference: Front Immunol. 2020; 11: 272. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7047330/

In vivo activity

Immunoblot analysis revealed a significant 75% reduction in AQP2 (aquaporin) abundance in the inner medulla of rats treated with demeclocycline compared with control rats (Fig. 10A). However, demeclocycline treatment led to significant 2.5- and 2.0-fold increases in AQP2 abundance in the outer medulla and cortex, respectively (Fig. 10, B and C). In kidney sections from control rats, immunostaining with a total AQP2 antibody demonstrated clear labeling of the apical and basolateral plasma membrane of inner medullary collecting duct cells (Fig. 11, A and C). In comparison, in kidney sections from demeclocycline-treated rats, AQP2 labeling intensity was clearly reduced (Fig. 11B). In addition, the cellular distribution of AQP2 was different in demeclocycline-treated rats; AQP2 was less prominent at the apical and basolateral plasma membrane, and greater numbers of AQP2-positive intracellular vesicles were observed (Fig. 11D). Immunohistochemistry using an antibody against pS256 AQP2 showed a large decrease in labeling intensity in demeclocycline-treated rats compared with control rats (Fig. 11, E and F, for the inner medulla). Additionally, immunoblot analysis revealed that AC5/6 abundance was 50% reduced in the inner medulla of demeclocycline-treated rats (Fig. 12A).

Reference: Am J Physiol Renal Physiol. 2013 Dec 15;305(12):F1705-18. https://pubmed.ncbi.nlm.nih.gov/24154696/

Note: The information listed here was extracted from literature. MedKoo has not independently retested and confirmed the accuracy of these methods. Customer should use it just for a reference only.