

# PRODUCT INFORMATION



## Demeclocycline (hydrochloride)

Item No. 21759

CAS Registry No.: 64-73-3

Formal Name: (4S,4aS,5aS,6S,12aS)-7-chloro-4-(dimethylamino)-1,4,4a,5,5a,6,11,12a-octahydro-3,6,10,12,12a-pentahydroxy-1,11-dioxo-2-naphthacene-carboxamide, monohydrochloride

Synonyms: Demethylchlortetracycline, Demethyltetracycline

MF: C<sub>21</sub>H<sub>21</sub>ClN<sub>2</sub>O<sub>8</sub> • HCl

FW: 501.3

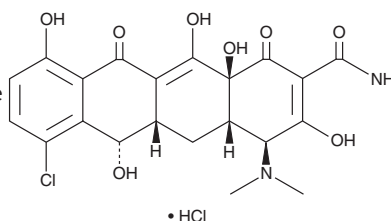
Purity: ≥90%

UV/Vis.: λ<sub>max</sub>: 229, 266, 369 nm

Supplied as: A crystalline solid

Storage: -20°C

Stability: ≥4 years



Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

### Laboratory Procedures

Demeclocycline (hydrochloride) is supplied as a crystalline solid. A stock solution may be made by dissolving the demeclocycline in the solvent of choice. Demeclocycline is soluble in organic solvents such as DMSO and dimethyl formamide, which should be purged with an inert gas. The solubility of demeclocycline in these solvents is approximately 1 and 1.4 mg/ml, respectively.

Further dilutions of the stock solution into aqueous buffers or isotonic saline should be made prior to performing biological experiments. Ensure that the residual amount of organic solvent is insignificant, since organic solvents may have physiological effects at low concentrations. Organic solvent-free aqueous solutions of demeclocycline can be prepared by directly dissolving the crystalline solid in aqueous buffers. The solubility of demeclocycline in PBS, pH 7.2, is approximately 3.3 mg/ml. We do not recommend storing the aqueous solution for more than one day.

### Description

Demeclocycline is a broad-spectrum tetracycline antibiotic produced by *S. aureofaciens*.<sup>1</sup> It has antimicrobial activity against ~3,200 pathogenic Gram-positive and Gram-negative bacteria *in vitro* that is 2-fold greater than that of tetracycline (Item No. 14328). The bactericidal action of demeclocycline is comparable to that of chlortetracycline but the duration of action is longer due to its resistance to degradation by acids or alkalis. It is effective against *S. pyogenes* and *K. pneumoniae* infections *in vivo* when administered orally or subcutaneously in mice. Demeclocycline decreases aquaporin 2 (AQP2) water channel gene transcription and protein abundance in mpkCCD murine collecting duct cells in a dose-dependent manner.<sup>2</sup> It also increases urine volume, decreases urine osmolality, and increases fractional excretion of water in a rat model of hyponatremia. Formulations containing demeclocycline have been used to treat hyponatremia due to syndrome of inappropriate antidiuretic hormone secretion (SIADH) and as endodontic antibiotics to prevent infection following root canal procedures.<sup>3,4</sup>

### References

1. Finland, M. and Garrod, L.P. *Br. Med. J.* **2(5204)**, 959-963 (1960).
2. Kortenoeven, M.L.A., Sinke, A.P., Hadrup, N., et al. *Am. J. Physiol. Renal Physiol.* **305(12)**, F1705-F1718 (2013).
3. Athanassiadis, B., Abbott, P.V., George, N., et al. *Aust. Dent. J.* **54(2)**, 141-146 (2009).
4. Grant, P., Ayuk, J., Bouloux, P.-M., et al. *Eur. J. Clin. Invest.* **45(8)**, 888-894 (2015).

#### WARNING

THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

#### SAFETY DATA

This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the complete Safety Data Sheet, which has been sent via email to your institution.

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