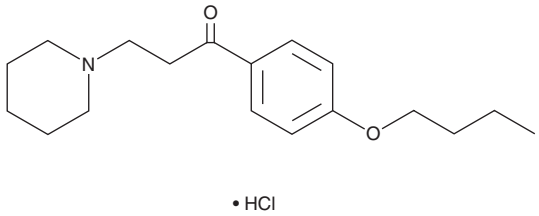
PRODUCT INFORMATION

Dyclonine (hydrochloride)

Item No. 27667

CAS Registry No.:	536-43-6
Formal Name:	1-(4-butoxyphenyl)-3-(1-piperidinyl)-1-propanone, monohydrochloride
Synonyms:	Dyclone, Dyclothane, Tanaclone
MF:	$C_{18}H_{27}NO_2$ • HCl
FW:	325.9
Purity:	≥98%
UV/Vis.:	λ_{max}: 221, 279 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

Dyclonine (hydrochloride) is supplied as a crystalline solid. A stock solution may be made by dissolving the dyclonine (hydrochloride) in the solvent of choice, which should be purged with an inert gas. Dyclonine (hydrochloride) is soluble in organic solvents such as ethanol, DMSO, and dimethyl formamide (DMF). The solubility of dyclonine (hydrochloride) in ethanol is approximately 5 mg/ml and approximately 3 mg/ml in DMSO and DMF.

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 dyclonine (hydrochloride) can be prepared by directly dissolving the crystalline solid in aqueous buffers. The solubility of dyclonine (hydrochloride) in PBS, pH 7.2, is approximately 2 mg/ml. We do not recommend storing the aqueous solution for more than one day.

Description

Dyclonine is a topical anesthetic that also has antimicrobial, anticancer, and neuroprotective properties.[1-3] It is active against *S. aureus*, *B. subtilis*, *E. coli*, *P. vulgaris*, *P. aeruginosa*, *C. albicans*, *M. lanosum*, and *T. mentagrophytes* with minimum microbicidal concentrations (MMCs) ranging from 0.006 to 0.8% v/v.[2] Dyclonine (25-100 µM) reduces aldehyde dehydrogenase (ALDH) activity in and viability of HSC-4 oral squamous cell carcinoma cells and enhances HSC-4 and OSC19 cell death induced by sulfasalazine (Item No. 15025).[3] *In vivo*, dyclonine (5 mg/kg per day) reduces tumor volume in an HSC-2 mouse xenograft model when administered alone or in combination with sulfasalazine. Dyclonine also induces cerebral frataxin (FXN) production and decreases time to cross and the number of foot slips in a level beam test in a mouse model of Friedreich's ataxia.[3]

References

1. Florestano, H.J. and Bahler, M.E. Antimicrobial properties of dyclonine hydrochloride, a new topical anesthetic. *J. Am. Pharm. Assoc.* **45(5),** 320-325 (1956).
2. Okazaki, S., Shintani, S., Hirata, Y., *et al.* Synthetic lethality of the ALDH3A1 inhibitor dyclonine and xCT inhibitors in glutathione deficiency-resistant cancer cells. *Oncotarget* **9(73),** 33832-33843 (2018).
2. Sahdeo, S., Scott, B.D., McMackin, M.Z., *et al.* Dyclonine rescues frataxin deficiency in animal models and buccal cells of patients with Friedreich's ataxia. *Hum. Mol. Genet.* **23(25),** 6848-6862 (2014).

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