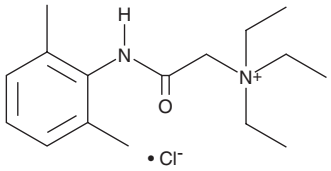
PRODUCT INFORMATION

QX-314 (chloride)

Item No. 18454

CAS Registry No.:	5369-03-9
Formal Name:	2-[(2,6-dimethylphenyl)amino]-N,N,N-triethyl-2-oxo-ethanaminium, monochloride
Synonym:	N-Ethyllidocaine
MF:	$C_{16}H_{27}N_2O \bullet Cl$
FW:	298.9
Purity:	≥98%
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

QX-314 (chloride) is supplied as a crystalline solid. A stock solution may be made by dissolving the QX-314 (chloride) in the solvent of choice, which should be purged with an inert gas. QX-314 (chloride) is soluble in organic solvents such as ethanol, DMSO, and dimethyl formamide. The solubility of QX-314 (chloride) in these solvents is approximately 10, 5, and 0.33 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 QX-314 (chloride) can be prepared by directly dissolving the crystalline solid in aqueous buffers. The solubility of QX-314 (chloride) in PBS, pH 7.2, is approximately 10 mg/ml. We do not recommend storing the aqueous solution for more than one day.

Description

QX-314 is a membrane-impermeant lidocaine derivative that selectively blocks sodium channels on nociceptive neurons when delivered intracellularly *via* the TRPV1 channel, but is reportedly ineffective with extracellular application.[1] When supplied in combination with 1 µM capsaicin (Item No. 92350), a TRPV1 receptor agonist, 5 mM QX-314 blocks 98% of sodium current in voltage-clamped nociceptive DRG neurons.[1] QX-314 elicits a long-lasting decrease in the response to painful mechanical and thermal stimuli without imparting the motor deficits (*e.g.*, numbness, paralysis) associated with many conventional local anesthetics.[1] At concentrations ranging from 10-70 mM, peripheral application of QX-314 dose-dependently produces robust local anesthesia with slow onset in the guinea pig intradermal wheal assay, the mouse tail-flick test, and the mouse sciatic nerve blockade model.[2] However, injection of 0.5-30 mM QX-314 in the lumbar intrathecal space produces neurotoxicity and death in mice.[3]

References

1. Binshtok, A.M., Bean, B.P., and Woolf, C.J. Inhibition of nociceptors by TRPV1-mediated entry of impermeant sodium channel blockers. *Nature* **449**, 607-610 (2007).
2. Lim, T.K.Y., MacLeod, B.A., Ries, C.R., *et al.* The quaternary lidocaine derivative, QX-314, produces long-lasting local anesthesia in animal models *in vivo*. *Anesthesiology* **107**, 305-311 (2007).
3. Schwarz, S.K.W., Cheung, H.M.-C., Ries, C.R., *et al.* Lumbar intrathecal administration of the quaternary lidocaine derivative, QX-314, produces irritation and death in mice. *Anesthesiology* **113**, 438-444 (2010).

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