QAQ dichloride

Cat. No.: HY-110358

Molecular Formula: $C_{28}H_{44}Cl_2N_6O_2$

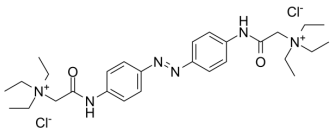
Molecular Weight: 567.59

Target: Sodium Channel

Pathway: Membrane Transporter/Ion Channel

Storage: 4°C, sealed storage, away from moisture

* In solvent : -80°C, 6 months; -20°C, 1 month (sealed storage, away from moisture)



SOLVENT & SOLUBILITY

In Vitro

DMSO : 10 mg/mL (17.62 mM; ultrasonic and warming and heat to 60°C)

Preparing Stock Solutions	Solvent / Mass / Concentration	1 mg	5 mg	10 mg
	1 mM	1.7618 mL	8.8092 mL	17.6184 mL
	5 mM	0.3524 mL	1.7618 mL	3.5237 mL
	10 mM	0.1762 mL	0.8809 mL	1.7618 mL

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

In Vivo

1. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 1 mg/mL (1.76 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 1 mg/mL (1.76 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

QAQ dichloride, a photoswitchable voltage-gated Na_V and K_V channels blocker, blocks channels in its trans form (of the azobenzene photoswitch), but not in its cis form. QAQ dichloride is membrane-impermeant and only infiltrates pain-sensing neurons that express endogenous import channels. QAQ dichloride acts as a light-sensitive analgesic and can be used for studying of signaling mechanisms in acute and chronic pain[1][2].

IC_{50} & Target

Target: voltage-gated Na_V and K_V channels

In Vitro

QAQ dichloride (100 μM) does not cross the membrane and can be injected into cells through a micropipette to photosensitize a single cell and afford subcellular control of action potential propagation. It blocks Shaker-IR current in the trans configuration and unblocks it in the cis configuration[1].
QAQ dichloride can be used to develop red-shifted derivatives of QAQ, powerful doubly charged photochromic

blockers.These derivatives allow for remote control of K_v and Na_v channel conductance with light and offer the opportunity to silence neuronal activity reversibly[2].

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

REFERENCES

[1]. Timm Fehrentz, et al. Exploring the Pharmacology and Action Spectra of Photochromic Open-Channel Blockers. Chembiochem. 2012 Aug 13;13(12):1746-9.

[2]. Alexandre Mourot, et al.Photochromic Potassium Channel Blockers: Design and Electrophysiological Characterization. Methods Mol Biol. 2013;995:89-105.

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