Product Data Sheet

Product Name: 2-Pyridylethylamine dihydrochloride
Cat. No.: GC11001

Chemical Properties

Cas. No.	3343-39-3		
Chemical Name	2-(pyridin-2-yl)ethanamine dihydrochloride		
SMILES	NCCC1=NC=CC=C1.Cl.Cl		
Formula	$C_7H_{10}N_2.2HCl$	M.Wt	195.09
Solubility	<19.51mg/ml in Water; <9.75mg/ml in DMSO	Storage	Desiccate at RT
General tips	For obtaining a higher solubility , please warm the tube at 37 ℃ and shake it in the ultrasonic bath for a while.Stock solution can be stored below -20℃ for several months.		
Shipping Condition	Evaluation sample solution : ship with blue ice All other available size: ship with RT , or blue ice upon request.		
Structure			

Protocol

Cell experiment [1]:

Cell lines	DDT1MF-2 hamster vas deferens smooth muscle cells
Preparation Method	DDT1MF-2 cells were prelabelled with [^{3}H]-myo-inositol for 24 hours and stimulated with 2-pyridylethylamine dihydrochloride (10μM–1mM) for 10 minutes in the presence of 20mM LiCl.
Reaction Conditions	10μM–1mM; 10 minutes

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Applications	2-Pyridylethylamine dihydrochloride concentration-dependently stimulated [^{3}H]-inositol phosphate accumulation in DDT1MF-2 cells, with an EC_{50} of 85μM. The maximal response induced by 2-pyridylethylamine dihydrochloride was 67.7% of the response elicited by histamine (100%), indicating partial agonist activity at H_1 receptors. The response was antagonized by mepyramine (K_D=0.36nM).

Animal experiment [2]:

Animal models	Adult male Wistar rats
Preparation Method	Rats were bilaterally implanted with guide cannulas targeting the ventral posteromedial (VPM) nucleus of the thalamus. Microinjections of 2-pyridylethylamine dihydrochloride (4μg/site) were administered 3 minutes before inducing trigeminal pain via corneal application of hypertonic saline or subcutaneous capsaicin injection into the vibrissa pad.
Dosage form	4μg/site; Intra-VPM microinjection; Single injection.
Applications	2-Pyridylethylamine dihydrochloride significantly suppressed both corneal pain (reduced eye wipes) and orofacial pain (decreased face rubbing duration).

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References:
[1] Souza-Silva E, Stein T, Mascarin LZ, et al. Intra-articular injection of 2-pyridylethylamine produces spinal NPY-mediated antinociception in the formalin-induced rat knee-joint pain model. Brain Res. 2020 May 15;1735:146757.
[2] Gemba C, Nakayama K, Nakamura S, et al. Involvement of histaminergic inputs in the jaw-closing reflex arc. J Neurophysiol. 2015 Jun 1;113(10):3720-35.

Background

2-Pyridylethylamine dihydrochloride is a histamine H1 receptor (H1R) agonist[1-2]. 2-Pyridylethylamine dihydrochloride is commonly used in research related to neurological diseases and pain[3-4].

In vitro, treatment of myofibroblasts isolated from intact rat hearts with 2-Pyridylethylamine dihydrochloride (10nM, 1μM, 100μM) significantly increased the collagen content within the cultures[5]. Stimulation of DDT$_1$MF-2 cells with 2-Pyridylethylamine dihydrochloride (10μM–1mM) for 10 minutes significantly activated inositol phospholipid hydrolysis[6].

In vivo, a single microinjection of 2-Pyridylethylamine dihydrochloride (4μg/site) into the ventral posteromedial nucleus (VPM) of the rat thalamus significantly suppressed hypertonic saline-induced corneal pain responses and capsaicin-induced orofacial pain responses[7]. A single intra-articular injection of 2-Pyridylethylamine (5nmol) into the

knee joint of a rat model of formaldehyde-induced knee joint pain produced significant analgesic effects by activating the spinal NPY-Y1 receptor pathway[8].

References:

[1] Gemba C, Nakayama K, Nakamura S, et al. Involvement of histaminergic inputs in the jaw-closing reflex arc. J Neurophysiol. 2015 Jun 1;113(10):3720-35.
[2] Vohra MM. Species differences in the contractile response to two specific histamine H1-receptor agonists: 2-(2-pyridyl)-ethylamine and 2-(2-aminoethyl)-thiazole. J Pharm Pharmacol. 1981 Feb;33(2):104-6.
[3] Shams Ghamsary M, Ghiasi M, Naghavi SS. Insight into the activation mechanism of carbonic anhydrase(II) through 2-(2-aminoethyl)-pyridine: a promising pathway for enhanced enzymatic activity. Phys Chem Chem Phys. 2024 Mar 27;26(13):10382-10391.
[4] Asgharieh-Ahari M, Tamaddonfard E, Erfanparast A, et al. Histamine and its H 1 receptors in the ventral pallidum mediate formalin-induced pain-related behaviors through this region and spinal cord opioid receptors. Behav Pharmacol. 2023 Dec 1;34(8):457-467.
[5] Piera L, Szymański J, Juszczak M, et al. Histamine is involved in the regulation of collagen content in cultured heart myofibroblasts via H2, H3 and H4 histamine receptors. Biomed Rep. 2021 Aug;15(2):71.
[6] Souza-Silva E, Stein T, Mascarin LZ, et al. Intra-articular injection of 2-pyridylethylamine produces spinal NPY-mediated antinociception in the formalin-induced rat knee-joint pain model. Brain Res. 2020 May 15;1735:146757.
[7] Tamaddonfard E, Erfanparast A, Ghasemi H, et al. The role of histamine H1, H2 and H3 receptors of ventral posteromedial nucleus of thalamus in modulation of trigeminal pain. Eur J Pharmacol. 2016 Nov 15;791:696-702.
[8] Gemba C, Nakayama K, Nakamura S, et al. Involvement of histaminergic inputs in the jaw-closing reflex arc. J Neurophysiol. 2015 Jun 1;113(10):3720-35.