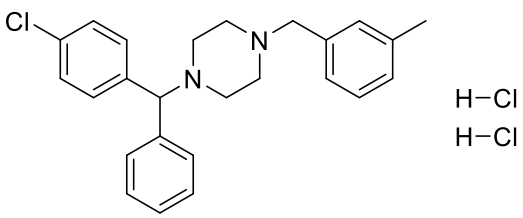
Product data sheet

MedKoo Cat#: 318176 Name: Meclizine Dihydrochloride CAS#: 1104-22-9 (2HCl) Chemical Formula: $C_{25}H_{29}Cl_3N_2$ Molecular Weight: 463.871	
Product supplied as:	Powder
Purity (by HPLC):	≥ 98%
Shipping conditions	Ambient temperature
Storage conditions:	Powder: -20°C 3 years; 4°C 2 years.
	In solvent: -80°C 3 months; -20°C 2 weeks.

1. Product description:
Meclizine dihydrochloride is a histamine H1 antagonist used in the treatment of motion sickness, vertigo, and nausea during pregnancy and radiation sickness. Meclizine hydrochloride increases human pregnane X receptor (hPXR) target gene expression in human hepatocyte primary cultures.

2. CoA, QC data, SDS, and handling instruction
SDS and handling instruction, CoA with copies of QC data (NMR, HPLC and MS analytical spectra) can be downloaded from the product web page under "QC And Documents" section. Note: copies of analytical spectra may not be available if the product is being supplied by MedKoo partners. Whether the product was made by MedKoo or provided by its partners, the quality is 100% guaranteed.

3. Solubility data

Solvent	Max Conc. mg/mL	Max Conc. mM
DMSO	4	8.62

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	2.16 mL	10.78 mL	21.56 mL
5 mM	0.43 mL	2.16 mL	4.31 mL
10 mM	0.22 mL	1.08 mL	2.16 mL
50 mM	0.04 mL	0.22 mL	0.43 mL

5. Molarity Calculator, Reconstitution Calculator, Dilution Calculator
Please refer the product web page under section of "Calculator"

6. Recommended literature which reported protocols for in vitro and in vivo study
In vitro study

1. Hong CT, Chau KY, Schapira AH. Meclizine-induced enhanced glycolysis is neuroprotective in Parkinson disease cell models. Sci Rep. 2016 May 5;6:25344. doi: 10.1038/srep25344. PMID: 27145922; PMCID: PMC4857109.

2. Gohil VM, Offner N, Walker JA, Sheth SA, Fossale E, Gusella JF, MacDonald ME, Neri C, Mootha VK. Meclizine is neuroprotective in models of Huntington's disease. Hum Mol Genet. 2011 Jan 15;20(2):294-300. doi: 10.1093/hmg/ddq464. Epub 2010 Oct 25. PMID: 20977989; PMCID: PMC3005902.

In vivo study

1. Singh H, Sodhi RK, Chahal SK, Madan J. Meclizine ameliorates memory deficits in streptozotocin-induced experimental dementia in mice: role of nuclear pregnane X receptors. Can J Physiol Pharmacol. 2020 Jun;98(6):383-390. doi: 10.1139/cjpp-2019-0421. Epub 2020 Jan 14. PMID: 31935134.

2. Kishi S, Campanholle G, Gohil VM, Perocchi F, Brooks CR, Morizane R, Sabbisetti V, Ichimura T, Mootha VK, Bonventre JV. Meclizine Preconditioning Protects the Kidney Against Ischemia-Reperfusion Injury. EBioMedicine. 2015 Jul 29;2(9):1090-101. doi: 10.1016/j.ebiom.2015.07.035. PMID: 26501107; PMCID: PMC4588407.

7. Bioactivity

Product data sheet

Biological target:

Meclizine (NSC 28728) is a histamine H1 receptor antagonist.

In vitro activity

The protection of meclizine was tested in primary rat cortical cultures highly enriched with neurons (supplementary S1). 6-OHDA induced a dose-dependent increase of Fluoro-jade C (FJ-C) stain, which reflected the neuronal death (supplementary S2A,B). The concentration of 10 μM 6-OHDA was chosen because of remarkable but not overwhelming effect of cell death (21.10 ± 5.37% FJ-C stained cells compared with no-toxin control: 6.65 ± 0.67% FJ-C stained cells). Compared with control, 3.125 μM of meclizine treatment, which was determined by the dose-dependent experiments of the protection of meclizine against 6-OHDA (supplementary S2C), for 24 hours did not increase the neuronal death detected by FJ-C stain. Upon 10 μM of 6-OHDA treatment for 24 hours, 3.125 μM meclizine significantly reduced the neuronal death release from 20.38 ± 1.57% to 12.68 ± 0.74% ($p < 0.001$) (Fig. 1A). The protection of meclizine was also confirmed by the LDH release assay: upon 10 μM of 6-OHDA treatment for 24 hours, 3.125 μM meclizine significantly reduced LDH release from 10.8 ± 1.4% to 6.8 ± 0.9% ($p < 0.05$) (Fig. 1B). Propidium iodide binding assay confirmed the protection by meclizine in primary rat cortical cultures (Fig. 1C).

Reference: Sci Rep. 2016 May 5;6:25344. https://www.ncbi.nlm.nih.gov/pmc/articles/pmid/27145922/

In vivo activity

Dementia was induced in mice by intacerebroventricular administration of streptozotocin (STZ) followed by treatment with meclizine, a PXR agonist, and subsequently exposed to the Morris water maze test and biochemical and histopathological analysis to evaluate the effect on cognition. STZ-treated mice exhibited significant enhancement in brain thiobarbituric acid reactive species, interleukin-1β, tumour necrosis factor-α, myeloperoxidase, and acetylcholinestrase activity in addition to diminution in glutathione levels and superoxide dismutase activity in comparison to untreated mice. Administration of meclizine to STZ mice recuperated cognition and biochemical alterations. Concomitant administration of ketoconazole, a PXR antagonist, with meclizine prevented the protective effects. The upshots of our study proclaim that meclizine protects cognitive deficits by virtue of its antioxidant, anticholinesterase, and antiinflammatory properties. Results also signify the potential of PXR in neuroprotective actions of meclizine in dementia.

Reference: Can J Physiol Pharmacol. 2020 Jun;98(6):383-390. https://cdnsciencepub.com/doi/10.1139/cjpp-2019-0421?url_ver=Z39.88-2003&rfr_id=ori:rid:crossref.org&rfr_dat=cr_pub%20%200pubmed

Note: The information listed here was extracted from literature. MedKoo has not independently retested and confirmed the accuracy of these methods. Customer should use it just for a reference only.