

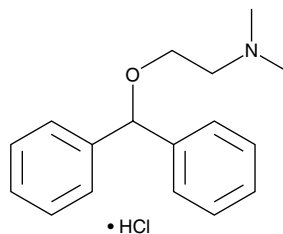
Product Information



Diphenhydramine (hydrochloride)

Item No. 11158

CAS Registry No.: 147-24-0
Formal Name: 2-(diphenylmethoxy)-N,N-dimethylethanamine, monohydrochloride
Synonym: DPH
MF: C₁₇H₂₁NO • HCl
FW: 291.8
Purity: ≥98%
Stability: ≥2 years at -20°C
Supplied as: A crystalline solid



Laboratory Procedures

For long term storage, we suggest that diphenhydramine (DPH) (hydrochloride) be stored as supplied at -20°C. It should be stable for at least two years.

DPH (hydrochloride) is supplied as a crystalline solid. A stock solution may be made by dissolving the DPH (hydrochloride) in the solvent of choice. DPH (hydrochloride) is soluble in organic solvents such as ethanol, DMSO, and dimethyl formamide, which should be purged with an inert gas. The solubility of DPH (hydrochloride) in these solvents is approximately 30, 20, and 10 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 DPH (hydrochloride) can be prepared by directly dissolving the crystalline solid in aqueous buffers. The solubility of DPH (hydrochloride) in PBS, pH 7.2, is approximately 10 mg/ml. We do not recommend storing the aqueous solution for more than one day.

DPH is a first generation antihistamine which is a potent antagonist of the human H₁ receptor (K_i = 11.7 nM).^{1,2} Like many first generation antihistamines, DPH readily crosses the blood-brain barrier and produces diverse cognitive and psychomotor effects.^{1,3} DPH also antagonizes muscarinic cholinergic receptors (K_i = 100 to 260 nM for M₁ through M₅), increasing the range of central nervous system effects and applications.⁴

References

1. Thurmond, R.L., Gelfand, E.W., and Dunford, P.J. The role of histamine H₁ and H₄ receptors in allergic inflammation: The search for new antihistamines. *Nat. Rev. Drug Discov.* **7**, 41-53 (2008).
2. Booth, R.G., Moniri, N.H., Bakker, R.A., *et al.* A novel phenylaminotetralin radioligand reveals a subpopulation of histamine H₁ receptors. *J. Pharmacol. Exp. Ther.* **302**(1), 328-336 (2002).
3. Kay, G.G. and Harris, A.G. Loratadine: A non-sedating antihistamine. Review of its effects on cognition, psychomotor performance, mood and sedation. *Clin. Exp. Allergy* **29**, 147-150 (1999).
4. Bolden, C., Cusack, B., and Richelson, E. Antagonism by antimuscarinic and neuroleptic compounds at the five cloned human muscarinic cholinergic receptors expressed in Chinese hamster ovary cells. *J. Pharmacol. Exp. Ther.* **260**, 576-580 (1992).

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