# Galanthamine hydrobromide

**Cat. No.:** HY-A0009

**CAS No.:** 1953-04-4

**Molecular Formula:** $C_{17}H_{22}BrNO_3$

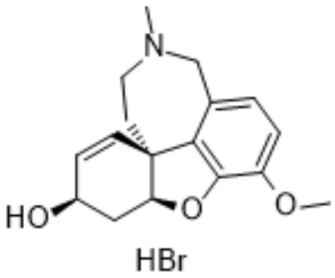
**Molecular Weight:** 368.27

**Target:** Cholinesterase (ChE); nAChR

**Pathway:** Neuronal Signaling; 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**

$H_2O$ : 16.67 mg/mL (45.27 mM; ultrasonic and warming and heat to 80°C)

DMSO : 12.5 mg/mL (33.94 mM; ultrasonic and warming and heat to 60°C)

**Preparing Stock Solutions**

| Solvent / Mass / Concentration | 1 mg | 5 mg | 10 mg |
|---|---|---|---|
| 1 mM | 2.7154 mL | 13.5770 mL | 27.1540 mL |
| 5 mM | 0.5431 mL | 2.7154 mL | 5.4308 mL |
| 10 mM | 0.2715 mL | 1.3577 mL | 2.7154 mL |

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

**In Vivo**

1. Add each solvent one by one: PBS
   Solubility: 10 mg/mL (27.15 mM); Clear solution; Need ultrasonic
2. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 1.25 mg/mL (3.39 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 1.25 mg/mL (3.39 mM); Clear solution
4. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 1.25 mg/mL (3.39 mM); Clear solution

## BIOLOGICAL ACTIVITY

**Description**

Galanthamine hydrobromide (Galantamine hydrobromide) is a selective, reversible, competitive, alkaloid AChE inhibitor, with an $IC_{50}$ of 0.35 μM. Galanthamine hydrobromide is a potent allosteric potentiating ligand (APL) of human $\alpha_3\beta_4$, $\alpha_4\beta_2$, $\alpha_6\beta_4$ nicotinic receptors ( nAChRs). Galanthamine hydrobromide is developed for the research of Alzheimer's disease (AD)[1][2][3].

**$IC_{50}$ & Target**

AChE

**In Vitro**

Galanthamine hydrobromide is 53-fold selectivity for AChE over butyrylcholinesterase[2].
Galanthamine hydrobromide (25-1000 μM) inhibits both Aβ 1-40 (50 μM) and Aβ 1-42 (50 μM) aggregation[4].
Galanthamine hydrobromide (25-1000 μM) protects against Aβ(1-40) and Aβ(1-42) toxicity in SH-SY5Y cells[4].
Galanthamine hydrobromide also dramatically reduces Aβ(1-40)-induced cellular apoptosis[4].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

**In Vivo**

Galanthamine hydrobromide (1.25-2.5 mg/kg; i.p. ) reduces cognitive deficits in APP23 mice[5].
Galanthamine hydrobromide (10 mg/kg; i.g.) displays short elimination half-life of approximately 2 h in wild-type mice[6].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

| | |
|---|---|
| Animal Model: | APP23 mice[5] |
| Dosage: | 1.25 mg/kg, 2.5 mg/kg |
| Administration: | Intraperitoneal injection, daily, 1 week |
| Result: | Effectively remedied the spatial learning deficit. |

| | |
|---|---|
| Animal Model: | Female 57B1/6J wild type[6] |
| Dosage: | 10 mg/kg |
| Administration: | Oral gavage (Pharmacokinetic Analysis) |
| Result: | $C_{max}$ (0.31 μg/mL), $t_{1/2\beta}$ (1.6 h), $AUC_{0\text{-}24h}$ (0.67 μg • h/mL). |

## CUSTOMER VALIDATION

- Nat Commun. 2023 Apr 17;14(1):2182.
- Free Radic Biol Med. 2019 Dec;145:20-32.
- Antioxidants (Basel). 2022, 11(7), 1228.
- Antioxidants (Basel). 2022 Feb 14;11(2):385.
- Biochem Pharmacol. 2020 Oct;180:114139.

See more customer validations on www.MedChemExpress.com

## REFERENCES


[1]. L J Scott, et al. Galantamine: a review of its use in Alzheimer's disease. Drugs. 2000 Nov;60(5):1095-122.

[2]. Marek Samochocki, et al. Galantamine is an allosterically potentiating ligand of neuronal nicotinic but not of muscarinic acetylcholine receptors. Pharmacol Exp Ther. 2003 Jun;305(3):1024-36.

[3]. Acharya Balkrishna, et al. Anti-Acetylcholinesterase Activities of Mono-Herbal Extracts and Exhibited Synergistic Effects of the Phytoconstituents: A Biochemical and Computational Study. Molecules. 2019 Nov; 24(22): 4175.

[4]. Balpreet Matharu, et al. Galantamine inhibits beta-amyloid aggregation and cytotoxicity. J Neurol Sci. 2009 May 15;280(1-2):49-58.

[5]. Debby Van Dam, et al. Symptomatic effect of donepezil, rivastigmine, galantamine and memantine on cognitive deficits in the APP23 model. Psychopharmacology (Berl). 2005 Jun;180(1):177-90.

[6]. Johan Monbaliu, et al. Pharmacokinetics of galantamine, a cholinesterase inhibitor, in several animal species. Arzneimittelforschung. 2003;53(7):486-95.



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