

Product Data Sheet

Product Name: NE 100 hydrochloride

Cat. No.: GC16004

Chemical Properties

Cas. No. 149409-57-4

Chemical Name N-(4-methoxy-3-phenethoxyphenethyl)-N-propylpropan-1-amine hydrochloride

SMILES CCCN(CCC1=CC(OC2=CC=CC=C2)=C(OC)C=C1)CCC.Cl

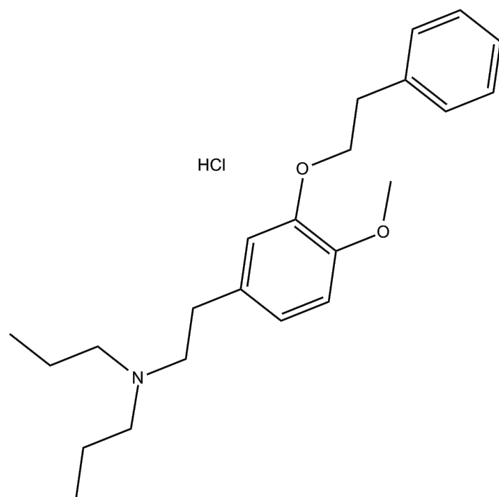
Formula $C_{23}H_{33}NO_2 \cdot HCl$ M.Wt 391.97

Solubility DMF: 30 mg/mL, DMSO: 30 mg/mL, Ethanol: 30 mg/mL, PBS (pH 7.2): 0.25 mg/mL
Storage Store at -20°C

General tips For obtaining a higher solubility, please warm the tube at 37 °C and shake it in the ultrasonic bath for a while. Stock solution can be stored below -20°C 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]:

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Cell lines	PC12 cells (rat adrenal pheochromocytoma cell line)
Preparation Method	PC12 cells were plated in DMEM containing 0.5% fetal bovine serum (FBS). 24 hours after plating, the medium was replaced with DMEM containing 0.5% FBS with nerve growth factor (NGF; 2.5ng/ml), with NE 100 hydrochloride (1.0μM), for differentiation.
Reaction Conditions	1.0μM; 4 days.
Applications	Co-administration of the NE 100 hydrochloriden with ifenprodil (10μM) significantly reduced the potentiation of NGF-induced neurite outgrowth by ifenprodil. Administration of NE 100 hydrochloride alone did not alter NGF-induced neurite outgrowth.

Animal experiment [2]:

Animal models	Wild type CD-1 mice
Preparation Method	Mice received subcutaneous (s.c.) injections of PCP (10mg/kg/day) or saline once daily for 10 days. This was followed by intraperitoneal (i.p.) administration of either saline, pridopidine (6mg/kg/day), or a combination of pridopidine and NE 100 hydrochloride (10mg/kg/day) once daily for another 14 consecutive days. Novel object recognition testing was performed after the treatment regime.
Dosage form	10mg/kg; i.p.; once daily for 14 days.

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Applications

Co-administration of NE 100 hydrochloride attenuated the effect of pridopidine, such that the exploratory preference of NE 100 hydrochloride -treated animals was not significantly different from that of animals receiving PCP and saline. NE 100 hydrochloride counteracted the ability of pridopidine to reverse PCP-induced deficits in novel object recognition.

References:

- [1] Ishima T, Hashimoto K. Potentiation of nerve growth factor-induced neurite outgrowth in PC12 cells by ifenprodil: the role of sigma-1 and IP3 receptors. PLoS One. 2012;7(5):e37989.
- [2] Sahlholm K, Valle-León M, Fernández-Dueñas V, et al. Pridopidine Reverses Phencyclidine-Induced Memory Impairment. Front Pharmacol. 2018 Apr 10;9:338.

Background

NE 100 hydrochloride is a selective sigma-1 receptor antagonist ($IC_{50}=4.16nM$) [1-2]. NE 100 hydrochloride can improve cognitive impairment, and possesses neuroprotective and antipsychotic activities. NE 100 hydrochloride can be used in research related to nervous system diseases[3-4].

In vitro, PC12 cells were co-treated with NE 100 hydrochloride (1.0 μM) and ifenprodil (10 μM) for 4 days in the context of nerve growth factor (NGF) (2.5ng/ml)-induced differentiation. NE 100 hydrochloride significantly inhibited the potentiating effect of ifenprodil on NGF-induced neurite outgrowth[5]. Human pulmonary artery endothelial cells (HPAECs) were pretreated with NE 100 hydrochloride (10 μM) for 1 hour, followed by stimulation with LPS (1 $\mu g/mL$) for 6 hours. NE 100 hydrochloride had no effect on LPS-induced expression of the pro-inflammatory factors VCAM-1 and IL-6, on I κ B α degradation, or on thrombin-induced intracellular Ca^{2+} release[6].

In vivo, NE 100 hydrochloride (10mg/kg) and Pridopidine (6mg/kg) were co-administered once daily via intraperitoneal injection to CD-1 mice that had previously received phencyclidine (PCP; 10mg/kg/day) for 10 days; this combined treatment continued for 14 days. NE 100 hydrochloride attenuated the ability of Pridopidine to reverse the PCP-induced deficits in novel object recognition[7]. In a glomerular injury model using C57BL/6J mice, NE 100 hydrochloride (1mg/kg/day) was administered via daily intraperitoneal injection for 14 days. NE 100 hydrochloride had no effect on

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urinary protein leakage, but blocked the ameliorative effect of SA4503 on proteinuria^[8].

References:

- [1] Okuyama S, Imagawa Y, Ogawa S, et al. NE-100, a novel sigma receptor ligand: in vivo tests. Life Sci. 1993;53(18):PL285-90.
- [2] Yamamoto H, Yamamoto T, Sagi N, et al. NE-100, a novel sigma ligand: effects on [3H]TCP binding to intact primary cultured neuronal cells. Life Sci. 1995;56(2):PL39-43.
- [3] Chaki S, Tanaka M, Muramatsu M, et al. NE-100, a novel potent sigma ligand, preferentially binds to sigma 1 binding sites in guinea pig brain. Eur J Pharmacol. 1994 Jan 4;251(1):R1-2.
- [4] Okuyama S, Imagawa Y, Sakagawa T, et al. NE-100, a novel sigma receptor ligand: effect on phencyclidine-induced behaviors in rats, dogs and monkeys. Life Sci. 1994;55(7):PL133-8.
- [5] Ishima T, Hashimoto K. Potentiation of nerve growth factor-induced neurite outgrowth in PC12 cells by ifenprodil: the role of sigma-1 and IP3 receptors. PLoS One. 2012;7(5):e37989.
- [6] Mahamed Z, Shadab M, Najjar RA, et al. The Protective Role of Mitochondria-Associated Endoplasmic Reticulum Membrane (MAM) Protein Sigma-1 Receptor in Regulating Endothelial Inflammation and Permeability Associated with Acute Lung Injury. Cells. 2023 Dec 19;13(1):5.
- [7] Sahlholm K, Valle-León M, Fernández-Dueñas V, et al. Pridopidine Reverses Phencyclidine-Induced Memory Impairment. Front Pharmacol. 2018 Apr 10;9:338.
- [8] Tagashira H, Chida S, Bhuiyan MS, et al. SA4503 Mitigates Adriamycin-Induced Nephropathy via Sigma-1 Receptor in Animal and Cell-Based Models. Pharmaceuticals (Basel). 2025 Jan 27;18(2):172.

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