

Product Data Sheet

Product Name: PEAQX tetrasodium hydrate

Cat. No.: GC36865

Chemical Properties

Cas. No.

SMILES [O-]P([O-])(C(N[C@@H](C)C1=CC=C(Br)C=C1)C2=CC=CC3=C2N=C([O-])C([O-])=N3)=O.[H]O[H].[Na+].[Na+].[Na+].[Na+]

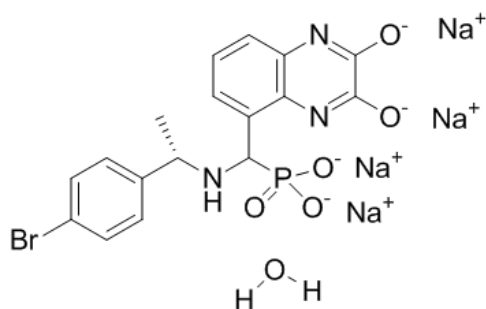
Formula $C_{17}H_{15}BrN_3Na_4O_6P$ M.Wt 560.15

Solubility Water: 25.5 mg/mL (45.52 mM and warming) 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]:

Cell lines Rat primary neuronal cells

Caution: Product has not been fully validated for medical applications. For research use only.

Tel: (909) 407-4943 Fax: (626) 353-8530 E-mail: tech@glpbio.com

Address: 10292 Central Ave. #205, Montclair, CA, USA

Product Data Sheet

Preparation Method Rat primary neuronal cells were maintained at 37°C in Earl's MEM with 5% CO₂ supplemented with 10% NuSerum, 27mM glucose, and 26mM NaHCO₃. Two 30-s pulses of NMDA (30μM, plus 10μM glycine) were used. PEAQX tetrasodium hydrate (5μM) was applied 5min before the second NMDA pulse, and the magnitude of the [Ca²⁺]_C increase was compared with the [Ca²⁺]_C increase in response to the first NMDA pulse. Ca²⁺ influx into neurons was assessed by measuring the magnitude of the [Ca²⁺]_C increase.

Reaction Conditions 5μM; 5min

Applications PEAQX tetrasodium hydrate treatment resulted in inhibited Ca²⁺ influx induced by NMDA in cells.

Animal experiment [2]:

Animal models Wistar-Imamichi rats

Preparation Method Wistar-Imamichi rats were subcutaneously injected with 10mg/kg PEAQX tetrasodium hydrate twice a day (at least 8 hours apart) from postnatal days 7 to 20. The rats were kept in a room with constant temperature and humidity, and the light-dark cycle of 12 hours (8:00 am to 8:00 pm). Food and water were allowed ad libitum, and behavioral phenotyping was performed thereafter.

Dosage form 10mg/kg; twice a day for 14 days; s.c.

Applications PEAQX tetrasodium hydrate treatment resulted in neonatal rats showing spatial working memory deficits as well as enhanced responsiveness to sound stimuli.

Caution: Product has not been fully validated for medical applications. For research use only.

Tel: (909) 407-4943 Fax: (626) 353-8530 E-mail: tech@glpbio.com

Address: 10292 Central Ave. #205, Montclair, CA, USA

Product Data Sheet

References:

- [1] Brittain M K, Brustovetsky T, Brittain J M, et al. Ifenprodil, a NR2B-selective antagonist of NMDA receptor, inhibits reverse Na⁺/Ca²⁺ exchanger in neurons[J]. Neuropharmacology, 2012, 63(6): 974-982.
- [2] Furuie H, Yamada M. Neonatal blockade of NR2A-containing but not NR2B-containing NMDA receptor induces spatial working memory deficits in adult rats[J]. Neuroscience Research, 2022, 176: 57-65.

Background

PEAQX tetrasodium hydrate is a potent orally active NMDA antagonist, with IC₅₀ values of 0.270μM for hNMDA 1A/2A and 29.6μM for 1A/2B receptors, respectively [1]. PEAQX tetrasodium hydrate is widely used in animal models to regulate motor ability and brain function[2].

In vitro, PEAQX tetrasodium hydrate treatment (5μM) for 5min inhibited Ca²⁺ influx induced by NMDA in rat primary neuronal cells [3]. Treatment with 3μM PEAQX tetrasodium hydrate for 12h induced apoptosis and increased caspase-3 levels in corticostriatal organotypic slice cultures[4].

In vivo, A single dose of 20mg/kg subcutaneous injection of PEAQX tetrasodium hydrate for 30min reduced the incidence of generalized seizures (GS) in a rat model of convulsive seizures[5]. A single subcutaneous injection of 3.75mg/kg PEAQX tetrasodium hydrate could improve the global social activities of adolescent male Sprague-Dawley rats within 2 days[6]. Subcutaneous injection of PEAQX tetrasodium hydrate (10mg/kg) twice daily for 14 days resulted in neonatal rats showing spatial working memory deficits as well as enhanced responsiveness to sound stimuli[7].

References:

- [1] Auberson Y P, Allgeier H, Bischoff S, et al. 5-Phosphonomethylquinolinediones as competitive NMDA receptor antagonists with a preference for the human 1A/2A, rather than 1A/2B receptor composition[J]. Bioorganic & medicinal chemistry letters, 2002, 12(7): 1099-1102.
- [2] Egunlusi A O, Joubert J. NMDA receptor antagonists: emerging insights into molecular mechanisms and clinical applications in neurological disorders[J]. Pharmaceuticals, 2024, 17(5): 639.
- [3] Brittain M K, Brustovetsky T, Brittain J M, et al. Ifenprodil, a NR2B-selective antagonist of NMDA

Caution: Product has not been fully validated for medical applications. For research use only.

Tel: (909) 407-4943 Fax: (626) 353-8530 E-mail: tech@glpbio.com

Address: 10292 Central Ave. #205, Montclair, CA, USA

Product Data Sheet

receptor, inhibits reverse Na⁺/Ca²⁺ exchanger in neurons[J]. *Neuropharmacology*, 2012, 63(6): 974-982.

[4] Anastasio N C, Xia Y, O'Connor Z R, et al. Differential role of N-methyl-D-aspartate receptor subunits 2A and 2B in mediating phencyclidine-induced perinatal neuronal apoptosis and behavioral deficits[J]. *Neuroscience*, 2009, 163(4): 1181-1191.

[5] Mares P, Tsenov G, Kubova H. Anticonvulsant action of GluN2A-preferring antagonist PEAQX tetrasodium hydrate in developing rats[J]. *Pharmaceutics*, 2021, 13(3): 415.

[6] Morales M, Varlinskaya E I, Spear L P. Low doses of the NMDA receptor antagonists, MK-801, PEAQX tetrasodium hydrate, and ifenprodil, induces social facilitation in adolescent male rats[J]. *Behavioural brain research*, 2013, 250: 18-22.

[7] Furuie H, Yamada M. Neonatal blockade of NR2A-containing but not NR2B-containing NMDA receptor induces spatial working memory deficits in adult rats[J]. *Neuroscience Research*, 2022, 176: 57-65.

Caution: Product has not been fully validated for medical applications. For research use only.

Tel: (909) 407-4943 Fax: (626) 353-8530 E-mail: tech@glpbio.com

Address: 10292 Central Ave. #205, Montclair, CA, USA