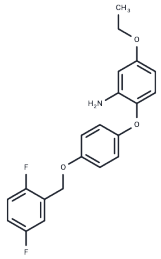
Data Sheet (Cat.No.T3508)

TargetMol

SEA0400

Chemical Properties



CAS No. : 223104-29-8

Formula: C21H19F2NO3

Molecular Weight: 371.38

Storage: Powder: -20°C for 3 years | In solvent: -80°C for 1 year
Actual storage temperature shall be subject to the COA.

Biological Description

Description	SEA0400 is a selective inhibitor of the Na+/Ca2+ exchanger.
Targets(IC50)	Calcium Channel,Na+/Ca2+ Exchanger
In vitro	SEA0400 inhibits Na+-dependent 45Ca2+ uptake in cultured neurons, astrocytes, and microglia. IC50 values of SEA0400 are 33 nM (neurons), 5.0 nM (astrocytes), and 8.3 nM (microglia)[1]. SEA0400 prevents sodium nitroprusside (SNP) to increase ERK and p38 MAPK phosphorylation, and production of reactive oxygen species (ROS) in an extracellular Ca2+-dependent manner[2].
In vivo	SEA0400, administered intravenously at a dose of 3 mg/kg followed by 3 mg/kg/h for 2 hours, reduces infarct volume in the cerebral cortex and striatum without altering mean regional cortical blood flow in anesthetized rats[1]. Additionally, SEA0400 offers protection against dopaminergic neurotoxicity, as evidenced by maintained dopamine levels in the midbrain and striatum, preserved tyrosine hydroxylase immunoreactivity in the substantia nigra and striatum, normal striatal dopamine release, and avoidance of motor deficits in MPTP-treated C57BL/6J mice[3].
Kinase Assay	Na+-Ca2+ exchange activity is determined by assaying Na+-dependent 45Ca2+ uptake as reported previously. Briefly, the cells are preincubated in Hanks' balanced saline solution (HBSS) for 20 min, and the medium is switched to HBSS containing 45Ca2+?and incubated for 5 min. To increase intracellular Na+?concentration, 1 mM ouabain plus 20 μM monensin (for astrocytes and microglia) and 10 μM monensin (for neurons) are used. Monensin is added simultaneously with the isotope. Ouabain is added 5 min before monensin in astrocytes and microglia. SEA0400 and KB-R7943 are added 5 min before monensin and present during 45Ca2+?uptake reaction.
Cell Research	SEA0400 is dissolved in DMSO (final concentration 0.1%). Cells, plated in 96-well plastic tissue culture plates, are incubated at 37°C for 30 min in normal or Ca2+-free HBSS containing 10 μM H2DCF-DA and 0.25 μg/mL Cremophor EL, and then rinsed twice with normal HBSS to remove excess dye. The cells are reperfused in normal HBSS for 1 h, and the conversion of H2DCF-DA to its fluorescent product dichlorofluorescein by ROS, presumably Water2 and hydroxyl radical, is determined with excitation at 485 nm and emission at 535 nm using a Wallac Multilabel counter. ROS production is expressed as a percentage of control cells. The linearity and sensitivity of ROS assay are confirmed using Water2 prior to the experiment. SEA0400 at the indicated concentrations is added

Cell Research	10 min before Ca2+?reperfusion and present until assay.

Solubility Information

Solubility	DMSO: 50 mg/mL (134.63 mM),Sonication is recommended. (< 1 mg/ml refers to the product slightly soluble or insoluble)
In vivo Formulation	10% DMSO+90% Corn Oil: 2.5 mg/mL (6.73 mM),Sonication is recommended. *Please add the solvents sequentially, clarifying the solution as much as possible before adding the next one. Dissolve by heating and/or sonication if necessary. Working solution is recommended to be prepared and used immediately. The formulation provided above is for reference purposes only. In vivo formulations may vary and should be modified based on specific experimental conditions.*

Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	2.6927 mL	13.4633 mL	26.9266 mL
5 mM	0.5385 mL	2.6927 mL	5.3853 mL
10 mM	0.2693 mL	1.3463 mL	2.6927 mL
50 mM	0.0539 mL	0.2693 mL	0.5385 mL

Please select the appropriate solvent to prepare the stock solution, according to the solubility of the product in different solvents. Please use it as soon as possible.

Note: The dilution table applies only to solid products. For liquid products, please calculate the stock solution based on the stated concentration and/or density.

Reference

Matsuda T, et al. SEA0400, a novel and selective inhibitor of the Na+-Ca2+ exchanger, attenuates reperfusion injury in the in vitro and in vivo cerebral ischemic models. J Pharmacol Exp Ther. 2001 Jul;298(1):249-56.
Fan Y, Huang S, Li S, et al.The adipose-neural axis is involved in epicardial adipose tissue-related cardiac arrhythmias.Cell Reports Medicine.2024
Nashida T, et al. The specific Na(+)/Ca(2+) exchange inhibitor SEA0400 prevents nitric oxide-induced cytotoxicity in SH-SY5Y cells. Neurochem Int. 2011 Aug;59(1):51-8.
Ago Y, et al. SEA0400, a specific Na+/Ca2+ exchange inhibitor, prevents dopaminergic neurotoxicity in an MPTP mouse model of Parkinson's disease. Neuropharmacology. 2011 Dec;61(8):1441-51.

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