

产品名称：**SEA0400**
产品别名：**SEA0400**

生物活性:				
Description	SEA0400 is a novel and selective inhibitor of the Na ⁺ -Ca ²⁺ exchanger (NCX), inhibiting Na ⁺ -dependent Ca ²⁺ uptake in cultured neurons, astrocytes, and microglia with IC ₅₀ s of from 5 to 33 nM.			
IC ₅₀ & Target	IC50: 5-33 nM (NCX)			
In Vitro	SEA0400 inhibits Na ⁺ -dependent 45Ca ²⁺ 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 Ca ²⁺ -dependent manner[2].			
In Vivo	SEA0400 (3 mg/kg + 3 mg/kg/h for 2 h, i.v.) attenuates the infarct volume in the cerebral cortex and striatum, does not affect the mean the regional cortical blood flow in anesthetized rats[1]. SEA0400 protects against the dopaminergic neurotoxicity (determined by dopamine levels in the midbrain and striatum, tyrosine hydroxylase immunoreactivity in the substantia nigra and striatum, striatal dopamine release, and motor deficits) in MPTP-treated C57BL/6J mice[3].			
Solvent&Solubility	<i>In Vitro:</i> DMSO : ≥ 32 mg/mL (86.17 mM) * "≥" means soluble, but saturation unknown.			
		Solvent Mass Concentration	1 mg	5 mg
	Preparing	1 mM	2.6927 mL	13.4633 mL
	Stock Solutions	5 mM	0.5385 mL	2.6927 mL
		10 mM	0.2693 mL	1.3463 mL
	*请根据产品在不同溶剂中的溶解度选择合适的溶剂配制储备液。一旦配成溶液，请分装保存，避免反复冻融造成的产品失效。 储备液的保存方式和期限：-80℃，6 months；-20℃，1 month。 -80℃ 储存时，请在 6 个月内使用，-20℃ 储存时，请在 1 个月内使用。 <i>In Vivo:</i> 请根据您的实验动物和给药方式选择适当的溶解方案。以下溶解方案都请先按照 In Vitro 方式配制澄清的储备液，再依次添加助溶剂： ——为保证实验结果的可靠性，澄清的储备液可以根据储存条件，适当保存；体内实验的工作液，建议您现用现配，当天使用； 以下溶剂前显示的百分比是指该溶剂在您配制终溶液中的体积占比；如在配制过程中出现沉淀、析出现象，可以通过加热和/或超声的方式助溶 1.请依序添加每种溶剂： 10% DMSO→40% PEG300 →5% Tween-80 → 45% saline Solubility: ≥ 2.5 mg/mL (6.73 mM); Clear solution 此方案可获得 ≥ 2.5 mg/mL (6.73 mM, 饱和度未知) 的澄清溶液。 以 1 mL 工作液为例，取 100 μL 25.0 mg/mL 的澄清 DMSO 储备液加到 400 μL PEG300 中，混合均匀 向上述体系中加入 50 μL Tween-80，混合均匀；然后继续加入 450 μL 生理盐水定容至 1 mL。			
	[1]. Matsuda T, et al. SEA0400, a novel and selective inhibitor of the Na ⁺ -Ca ²⁺ exchanger, attenuates reperfusion injury in the in vitro and in vivo cerebral ischemic models. J Pharmacol Exp Ther. 2001 Jul;298(1):249-56.			

References	[2]. 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. [3]. 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.
实验参考:	
Cell Assay	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 H₂O₂ 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 H₂O₂ prior to the experiment. SEA0400 at the indicated concentrations is added 10 min before Ca²⁺ reperfusion and present until assay. [1]
Animal Administration	Male Sprague-Dawley rats, weighing 289 to 325 g, are anesthetized with 1 to 2% halothane. A catheter is inserted into the femoral artery and connected to a pressure transducer to record blood pressure. Regional cortical blood flow is measured by a laser Doppler flowmeter, with probe placement at 2 mm posterior and 6 mm lateral to the bregma. SEA0400 or its vehicle with an equivalent volume is i.v. injected at 3 mg/kg and then infused at 3 mg/kg/h for 2 h under normal conditions without MCA occlusion. [1]
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. [1]
References	[1]. 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. [2]. 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. [3]. 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.