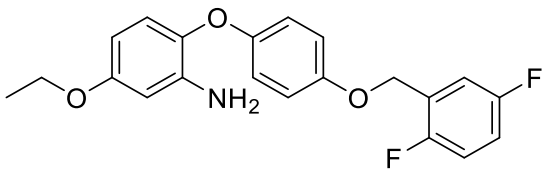
Product data sheet

MedKoo Cat#: 526678 Name: SEA0400 CAS#: 223104-29-8 Chemical Formula: $C_{21}H_{19}F_2NO_3$ Exact Mass: 371.1333 Molecular Weight: 371.38	
Product supplied as:	Powder
Purity (by HPLC):	≥ 98%
Shipping conditions	Ambient temperature
Storage conditions:	Powder: -20°C 3 years; 4°C 2 years.
	In solvent: -80°C 3 months; -20°C 2 weeks.

1. Product description:
SEA0400 is a Na+/Ca2+ exchanger 1 inhibitor. SEA0400 prevents dopaminergic neurotoxicity in an MPTP mouse model of Parkinson's disease. SEA0400 reduces calcium overload induced by ischemia and reperfusion in mouse ventricular myocytes. SEA0400 attenuates sodium nitroprusside-induced apoptosis in cultured rat microglia. SEA0400, preserves cardiac function and high-energy phosphates against ischemia/reperfusion injury.

2. CoA, QC data, SDS, and handling instruction
SDS and handling instruction, CoA with copies of QC data (NMR, HPLC and MS analytical spectra) can be downloaded from the product web page under "QC And Documents" section. Note: copies of analytical spectra may not be available if the product is being supplied by MedKoo partners. Whether the product was made by MedKoo or provided by its partners, the quality is 100% guaranteed.

3. Solubility data

Solvent	Max Conc. mg/mL	Max Conc. mM
DMF	1	2.69
DMSO	2	5.39
Ethanol	0.25	0.67

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	2.69 mL	13.46 mL	26.93 mL
5 mM	0.54 mL	2.69 mL	5.39 mL
10 mM	0.27 mL	1.35 mL	2.69 mL
50 mM	0.05 mL	0.27 mL	0.54 mL

5. Molarity Calculator, Reconstitution Calculator, Dilution Calculator
Please refer the product web page under section of "Calculator"

6. Recommended literature which reported protocols for in vitro and in vivo study
In vitro study

1. Nashida T, Takuma K, Fukuda S, Kawasaki T, Takahashi T, Baba A, Ago Y, Matsuda T. 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. doi: 10.1016/j.neuint.2011.03.026. Epub 2011 Jun 6. PMID: 21672583.
2. Iwamoto T, Kita S, Uehara A, Imanaga I, Matsuda T, Baba A, Katsuragi T. Molecular determinants of Na+/Ca2+ exchange (NCX1) inhibition by SEA0400. J Biol Chem. 2004 Feb 27;279(9):7544-53. doi: 10.1074/jbc.M310491200. Epub 2003 Dec 5. PMID: 14660663.

In vivo study

1. Kawakami S, Takada K, Aimoto M, Nagasawa Y, Kusakabe T, Kato K, Takahara A. The Antiarrhythmic Action of the Na+/Ca2+ Exchanger Inhibitor SEA0400 on Drug-Induced Long QT Syndrome Depends on the Severity of Proarrhythmic Conditions in Anesthetized Atrioventricular Block Rabbits. Biol Pharm Bull. 2023;46(8):1120-1127. doi: 10.1248/bpb.b23-00202. PMID: 37532563.

2. Bögeholz N, Schulte JS, Kaese S, Bauer BK, Pauls P, Dechering DG, Frommeyer G, Goldhaber JI, Kirchhefer U, Eckardt L, Pott C, Müller FU. The Effects of SEA0400 on Ca2+ Transient Amplitude and Proarrhythmia Depend on the Na+/Ca2+ Exchanger Expression Level in Murine Models. Front Pharmacol. 2017 Sep 21;8:649. doi: 10.3389/fphar.2017.00649. PMID: 28983248; PMCID: PMC5613119.

7. Bioactivity

Biological target:

SEA0400 is a selective inhibitor of the Na+/Ca2+ exchanger (IC50s = 5, 8.3, and 33 nM for inhibiting Na+-dependent Ca2+ uptake in rat astrocyte, microglia, and cortical neuron cell lines, respectively).

In vitro activity

SEA0400 exhibits renoprotective effects in a hypoxic injury model using porcine renal tubular cells expressing wild-type NCX1 but not SEA0400-insensitive mutants. SEA0400 demonstrates preferential inhibition of (45)Ca(2+) uptake by NCX1 compared to NCX2, NCX3, and NCKX2 in NCX-transfected fibroblasts.

Reference: J Biol Chem. 2004 Feb 27;279(9):7544-53. https://pubmed.ncbi.nlm.nih.gov/14660663/

In vivo activity

The results of this study suggest that SEA0400's antiarrhythmic effects on IKr blocker-induced TdP may be multifaceted, depending on the severity of proarrhythmogenic conditions, distinguishing it from the effects of verapamil. SEA0400 has the potential to inhibit low-dose nifekalant-induced TdP by suppressing the MAP-prolonging action of nifekalant. In animals treated with high-dose nifekalant, SEA0400 inhibited TdP without affecting the MAP-prolonging action of nifekalant.

Reference: Biol Pharm Bull. 2023;46(8):1120-1127. https://pubmed.ncbi.nlm.nih.gov/37532563/

Note: The information listed here was extracted from literature. MedKoo has not independently retested and confirmed the accuracy of these methods. Customer should use it just for a reference only.