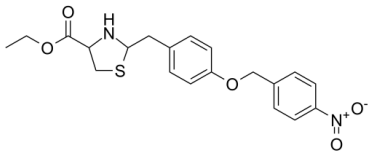
Data Sheet

Product Name:	SN 6
Cat. No.:	CS-0029062
CAS No.:	415697-08-4
Molecular Formula:	C20H22N2O5S
Molecular Weight:	402.46
Target:	Na+/Ca2+ Exchanger
Pathway:	Membrane Transporter/Ion Channel
Solubility:	DMSO : 62.5 mg/mL (155.29 mM; Need ultrasonic); H2O : < 0.1 mg/mL (insoluble)



BIOLOGICAL ACTIVITY:

SN 6 is a selective **Na^+/Ca^{2+} exchanger (NCX)** inhibitor, and inhibits $^{45}Ca^{2+}$ uptake by NCX1, NCX2, and NCX3, with **IC_{50}**s of 2.9, 16, and 8.6 μM, respectively. IC50 & Target: IC50 : 2.9 μM (NCX1), 16 μM (NCX2), 8.6 μM (NCX3)[1] **In Vitro:** SN 6 is a selective Na^+/Ca^{2+} exchanger inhibitor, which inhibits the initial rate of $^{45}Ca^{2+}$ uptake into NCX1, NCX2, and NCX3 transfectants with IC_{50} values of 2.9 ± 0.12, 16 ± 1.1, and 8.6 ± 0.27 μM. SN 6 (up to 30 μM) also less potently inhibits muscarinic acetylcholine receptor, with a higher IC_{50} of 18 μM. SN 6 (0.3-30 μM) completely inhibits the initial rate of Na^+_i-dependent $^{45}Ca^{2+}$ uptake into Na^+-loaded sarcolemmal vesicles in a dose dependent manner (IC_{50}, 5.3 ± 0.37 μM). SN 6 (0.3-10 μM) dose-dependently protects against the hypoxia/reoxygenation-induced LDH release in parental LLC-PK1 cells and NCX1 transfectants but not in K229Q transfectants[1]. SN 6 (1-30 μM) suppresses the bidirectional outward and inward I_{NCX} in a concentration-dependent manner, with IC_{50} values of 2.3 μM and 1.9 μM, respectively. SN 6 also inhibits bidirectional current (I_{NCX}) in a [Na^+]i concentration-dependent manner, with IC_{50} values of 3.4 μM, 2.3 μM, and 1.1 μM at 10 mM, 20 mM, and 30 mM [Na^+]i, respectively[2]. SN 6 inhibits hypoxia/reoxygenation-induced LDH release with an IC_{50} value of 0.63 ± 0.15 μM in NCX1 transfectants[3].

PROTOCOL (Extracted from published papers and Only for reference)

Cell Assay: [1]**Na^+_i-dependent $^{45}Ca^{2+}$ uptake** into cells expressing the wild-type or mutated exchangers are assayed. In brief, confluent transfectants in 24-well dishes are loaded with Na^+ by incubation at 37°C for 40 min in 0.5 mL of balanced salt solution (BSS) (10 mM HEPES/Tris, pH 7.4, 146 mM NaCl, 4 mM KCl, 2 mM $MgCl_2$, 0.1 mM $CaCl_2$, 10 mM glucose, and 0.1% bovine serum albumin) containing 1 mM ouabain and 10 μM monensin. $^{45}Ca^{2+}$ uptake is then initiated by switching the medium to Na^+-free BSS (replacing NaCl with equimolar choline chloride) or to normal BSS, both of which contain 0.1 mM $^{45}CaCl_2$ (370 kBq/mL) and 1 mM ouabain. After a 30-s incubation, $^{45}Ca^{2+}$ uptake is terminated by washing cells four times with an ice-cold solution containing 10 mM HEPES/Tris, pH 7.4, 120 mM choline chloride, and 10 mM $LaCl_3$. Cells are then solubilized with 0.1 N NaOH, and aliquots are taken for determination of radioactivity and protein. When present, SN 6 and KB-R7943 are included in the medium 15 min before the start of $^{45}Ca^{2+}$ uptake[1].

References:

[1]. Iwamoto T, et al. The exchanger inhibitory peptide region-dependent inhibition of Na+/Ca2+ exchange by SN-6 [2-[4-(4-nitrobenzyloxy)benzyl]thiazolidine-4-carboxylic acid ethyl ester], a novel benzyloxyphenyl derivative. Mol Pharmacol. 2004 Jul;66(1):45-55.

[2]. Niu CF, et al. Electrophysiological effects of SN-6, a novel Na+/Ca2+ exchange inhibitor on membrane currents in guinea pig ventricular myocytes. Ann N Y Acad Sci. 2007 Mar;1099:534-9.

[3]. Kita S, et al. Inhibitory mechanism of SN-6, a novel benzyloxyphenyl Na+/Ca2+ exchange inhibitor. Ann N Y Acad Sci. 2007 Mar;1099:529-33.

CAIndexNames:

4-Thiazolidinecarboxylic acid, 2-[[4-[(4-nitrophenyl)methoxy]phenyl]methyl]-, ethyl ester

SMILES:

CCOC(C(CS1)NC1CC2=CC=C(OCC3=CC=C([N+]([O-])=O)C=C3)C=C2)=O

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