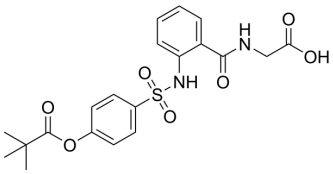
Sivelestat

Cat. No.:	HY-17443
CAS No.:	127373-66-4
Molecular Formula:	$C_{20}H_{22}N_2O_7S$
Molecular Weight:	434.46
Target:	Elastase; SARS-CoV
Pathway:	Metabolic Enzyme/Protease; Anti-infection
Storage:	4°C, protect from light * In solvent : -80°C, 1 year; -20°C, 6 months (protect from light)



SOLVENT & SOLUBILITY

In Vitro

DMSO : ≥ 100 mg/mL (230.17 mM)
Ethanol : 3.03 mg/mL (6.97 mM; Need ultrasonic)
* "≥" means soluble, but saturation unknown.

	Mass / Solvent / Concentration	1 mg	5 mg	10 mg
Preparing Stock Solutions	**1 mM**	2.3017 mL	11.5085 mL	23.0171 mL
	5 mM	0.4603 mL	2.3017 mL	4.6034 mL
	10 mM	0.2302 mL	1.1509 mL	2.3017 mL

Please refer to the solubility information to select the appropriate solvent.

In Vivo

1. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 2.5 mg/mL (5.75 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.5 mg/mL (5.75 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (5.75 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Sivelestat (EI546) is a competitive inhibitor of human neutrophil elastase, with an IC_{50} of 44 nM and a K_i of 200 nM. Sivelestat (EI546) has the potential for the study of acute lung injury/acute respiratory distress syndrome or disseminated intravascular coagulation in COVID-19[1][2][3][4].

In Vitro

Sivelestat (ONO-5046) does not inhibit trypsin, thrombin, plasmin, plasma kallikrein, pancreas kallikrein, chymotrypsin and cathepsin G even at 100 μM[1].
Sivelestat (ONO-5046) exhibits IC_{50} values of 44 nM, 36 nM, 19 nM, 37 nM and 49 nM for human, rabbit, rat, hamster and

	mouse neutrophil elastase, respectively[1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
In Vivo	Sivelestat (ONO-5046, 0.021-2.1 mg/kg, intratracheally) suppresses lung hemorrhage in hamster (ID_{50} = 82 pg/kg) by intratracheal administration and increase of skin capillary permeability in guinea pig (ID_{50} = 9.6 mg/kg) by intravenous administration, both of which are induced by human neutrophil elastase[1]. Sivelestat (10 mg/kg, infusion via the tail vein) ameliorates lung injury after hemorrhagic shock in rats[2]. Sivelestat (15, 60 mg/kg, ip) prevents ischemia–reperfusion injury in the rat bladder[3]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Animal Model:	Male Golden hamsters, weighing 90 to 110 g[1].
Dosage:	0.021-2.1 mg/kg.
Administration:	Intratracheally five min before HNE injection.
Result:	Significantly and dosedependently suppressed the lung hemorrhage.

Animal Model:	Male Sprague-Dawley rats weighing 350-400 g[2].
Dosage:	10 mg/kg.
Administration:	Continuous infusion via the tail vein at 10 mg/kg/h for 60 min during the resuscitation phase.
Result:	Greatly suppressed lung injury, as revealed by the reduced histological damage. Significantly ameliorated HSR-induced lung injury. Markedly decreased the levels of TNF-α and iNOS gene.

Animal Model:	Male Sprague Dawley rats, 8 weeks old and weighing 250-320 g[3].
Dosage:	15 mg/kg or 60 mg/kg.
Administration:	IP.
Result:	Decreased the blood flow in the bladder during reperfusion phase compared to the IR group.

CUSTOMER VALIDATION

- J Exp Med. 2023 Sep 4;220(9):e20221751.
- Nucleic Acids Res. 2021 Jan 8;49(D1):D1113-D1121.
- Biofabrication. 2021 Feb 1.
- Elife. 2022 Mar 23:11:e77444.
- Cell Biosci. 2022 Jul 22;12(1):114.

See more customer validations on www.MedChemExpress.com

REFERENCES

[1]. Kawabata K, et al. ONO-5046, a novel inhibitor of human neutrophil elastase. Biochem Biophys Res Commun. 1991 Jun 14;177(2):814-20.

[2]. Yuichiro Toda, et al. A neutrophil elastase inhibitor, sivelestat, ameliorates lung injury after hemorrhagic shock in rats. Int J Mol Med. 2007 Feb;19(2):237-43.

[3]. Tomoharu Kono, et al. Neutrophil elastase inhibitor, sivelestat sodium hydrate prevents ischemia-reperfusion injury in the rat bladder. Mol Cell Biochem. 2008 Apr;311(1-2):87-92.

[4]. Adeleh Sahebnasagh, et al. Neutrophil elastase inhibitor (sivelestat) may be a promising therapeutic option for management of acute lung injury/acute respiratory distress syndrome or disseminated intravascular coagulation in COVID-19. J Clin Pharm Ther. 2020 Aug 28.

Tel: 609-228-6898 Fax: 609-228-5909 E-mail: tech@MedChemExpress.com

Address: 1 Deer Park Dr, Suite Q, Monmouth Junction, NJ 08852, USA