

Product Data Sheet

Product Name: V-9302 hydrochloride

Cat. No.: GC39253

Chemical Properties

Cas. No. 2416138-42-4

SMILES O=C(O)[C@@H](N)CCN(CC1=CC=CC=C1OCC2=CC=CC(C)=C2)CC3=CC=CC=C3OCC4=CC=CC(C)=C4.[H]Cl

Formula $C_{34}H_{39}ClN_2O_4$ M.Wt 575.14

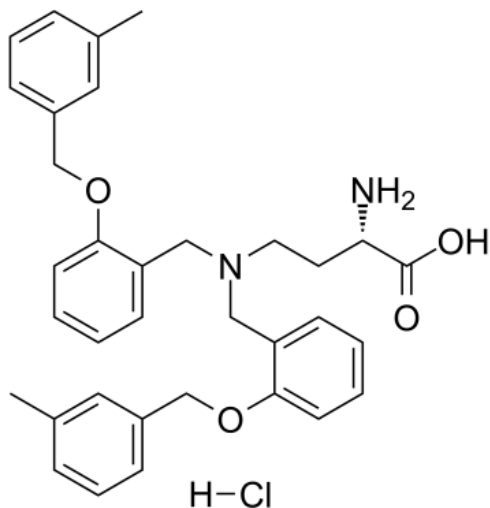
Solubility DMSO : 125 mg/mL (217.34 mM; Need ultrasonic); H_2O : 50 mg/mL (86.94 mM; Need ultrasonic); Ethanol : 100 mg/mL (185.63 mM)

Storage Store at $-20^{\circ}C$

General tips For obtaining a higher solubility , please warm the tube at $37^{\circ}C$ and shake it in the ultrasonic bath for a while. Stock solution can be stored below $-20^{\circ}C$ for several months.

Shipping Condition Evaluation sample solution : ship with blue ice All other available size: ship with RT , or blue ice upon request.

Structure



Protocol

Cell experiment [1]:

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Cell lines	Vascular smooth muscle cells (VSMCs)
Preparation Method	Primary vascular smooth muscle cells (VSMCs) were cultured under serum-starved conditions for 18 hours. Subsequently, they were incubated for 24 hours in the presence or absence of 10% FBS or PDGF-BB (20ng/mL), with or without 10 μ M V-9302.
Reaction Conditions	10 μ M; 24h
Applications	V-9302 hydrochloride decreases mitochondrial respiration in VSMCs stimulated with either FBS or PDGF.
Animal experiment [1]:	
Animal models	Male C57BL/6 J mice (Carotid artery ligation model)
Preparation Method	Carotid artery ligation-induced neointimal hyperplasia was established in mice, resulting in significant blockage-induced neointimal hyperplasia by 3 weeks post-surgery. Mice received intraperitoneal injections of V-9302 hydrochloride until sacrifice.
Dosage form	12.5mg/kg/day; i.p; 5 days per week for 3 weeks
Applications	V-9302 hydrochloride markedly suppresses neointima formation in mice.

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References:

[1]:Park HY, Kim MJ, et.al. V-9302 inhibits proliferation and migration of VSMCs, and reduces neointima formation in mice after carotid artery ligation. Biochem Biophys Res Commun. 2021 Jun 30;560:45-51. doi: 10.1016/j.bbrc.2021.04.079. Epub 2021 May 6. PMID: 33965788.

Background

V-9302 hydrochloride is a competitive small molecule antagonist of transmembrane glutamine flux that selectively and effectively targets the amino acid transporter ASCT2 (SLC1A5). Pharmacological blockade of ASCT2 with V-9302 leads to reduced cancer cell growth and proliferation, enhanced cell death, and elevated oxidative stress. These effects collectively contribute to potent antitumor responses observed both in vitro and in vivo^[1-3].

V-9302 hydrochloride (10 μ M; 24 hours) decreases mitochondrial respiration in VSMCs stimulated with either FBS or PDGF. This suggests that pharmacological inhibition of glutamine transport using V-9302 hydrochloride hinders mitochondrial respiration in growth factor-stimulated and proliferating VSMCs^[4]. Treatment of NCI-Meso-17 cells with V-9302 hydrochloride (5-15 μ M) decreases cell growth, impairs spheroid formation, and reduces cell invasion^[5].

V-9302 hydrochloride (75mg/kg; i.p.; 21 days) demonstrated effective inhibition of tumor growth in mouse HCT-116 and HT29 xenograft models^[1]. V-9302 hydrochloride (12.5mg/kg/day; i.p.; 5 days per week for 3 weeks) significantly inhibited neointima formation in mice^[4]. Combined treatment with CB-839 and V-9302 hydrochloride (30mg/kg, i.p.; 15 or 20 days) inhibited xenograft growth and promoted apoptosis in BALB/c nude mice bearing SNU398 and MHCC97H cells^[6]. V-9302 hydrochloride (50mg/kg; i.p.; daily for 5 days) exhibited significant tumor-suppressive effects in mice^[7].

References:

[1]. Schulte ML, Fu A, et.al. Pharmacological blockade of ASCT2-dependent glutamine transport leads to antitumor efficacy in preclinical models. Nat Med. 2018 Feb;24(2):194-202. doi: 10.1038/nm.4464. Epub 2018 Jan 15. PMID: 29334372; PMCID: PMC5803339.

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- [2]. Schulte ML, Khodadadi AB, et.al. 2-Amino-4-bis(aryloxybenzyl)aminobutanoic acids: A novel scaffold for inhibition of ASCT2-mediated glutamine transport. *Bioorg Med Chem Lett*. 2016 Feb 1;26(3):1044-1047. doi: 10.1016/j.bmcl.2015.12.031. Epub 2015 Dec 11. PMID: 26750251; PMCID: PMC4727990.
- [3]. Canul-Tec JC, Assal R, et.al. Structure and allosteric inhibition of excitatory amino acid transporter 1. *Nature*. 2017 Apr 27;544(7651):446-451. doi: 10.1038/nature22064. Epub 2017 Apr 19. PMID: 28424515; PMCID: PMC5410168.
- [4]. Park HY, Kim MJ, et.al.V-9302 inhibits proliferation and migration of VSMCs, and reduces neointima formation in mice after carotid artery ligation. *Biochem Biophys Res Commun*. 2021 Jun 30;560:45-51. doi: 10.1016/j.bbrc.2021.04.079. Epub 2021 May 6. PMID: 33965788.
- [5].Adhikary G, Shrestha S, et.al.Mesothelioma cancer cells are glutamine addicted and glutamine restriction reduces YAP1 signaling to attenuate tumor formation. *Mol Carcinog*. 2023 Apr;62(4):438-449. doi: 10.1002/mc.23497. Epub 2022 Dec 23. PMID: 36562471; PMCID: PMC10071591.
- [6]. Jin H, Wang S, et.al. A powerful drug combination strategy targeting glutamine addiction for the treatment of human liver cancer. *Elife*. 2020 Oct 5;9:e56749. doi: 10.7554/eLife.56749. PMID: 33016874; PMCID: PMC7535927.
- [7]. Edwards DN, Ngwa VM, et.al. Selective glutamine metabolism inhibition in tumor cells improves antitumor T lymphocyte activity in triple-negative breast cancer. *J Clin Invest*. 2021 Feb 15;131(4):e140100. doi: 10.1172/JCI140100. PMID: 33320840; PMCID: PMC7880417.

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