

Product Data Sheet

Product Name: VO-Ohpic trihydrate

Cat. No.: GC11007

Chemical Properties

Cas. No. 476310-60-8

Formula $C_{12}H_{15}N_2O_{11}V^{+}$

M.Wt 414.2

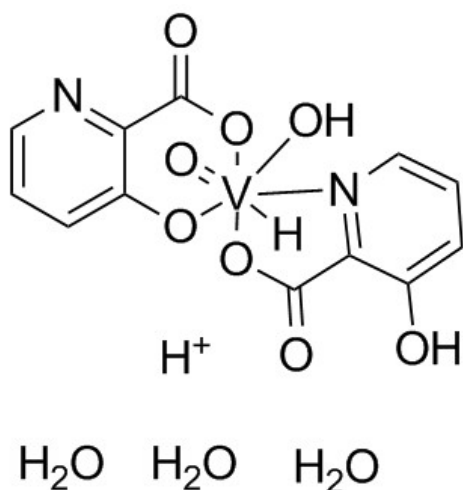
Solubility ≥ 121.8 mg/mL in DMSO, ≥ 45.8 mg/mL in EtOH with ultrasonic

Storage Store at -20°C

General tips For obtaining a higher solubility, please warm the tube at 37°C and shake it in the ultrasonic bath for a while. Stock solution can be stored below -20°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

Kinase experiment [1]:

Caution: Product has not been fully validated for medical applications. For research use only.

Tel: (909) 407-4943 Fax: (626) 353-8530 E-mail: tech@glpbio.com

Address: 10292 Central Ave. #205, Montclair, CA, USA

Product Data Sheet

Phosphate release assay

For the detection of PTEN and Sac1 activities, bismuth was added to the phosphate release assay in order to improve its stability and sensitivity. All enzyme preparations were tested for linearity to ensure that suitable amounts of enzyme were employed in the inhibitor assays. Enzymes were incubated with VO-Ohpic Trihydrate at various concentrations prior to starting the phosphatase reaction by adding the corresponding substrates presented in octylglucoside mixed micelles.

Cell experiment [1]:

Cell lines

NIH 3T3 and L1 fibroblasts

Preparation method

The solubility of this compound in DMSO is >10 mM. General tips for obtaining a higher concentration: Please warm the tube at 37°C for 10 minutes and/or shake it in the ultrasonic bath for a while. Stock solution can be stored below -20°C for several months.

Reaction Conditions 0, 10, 20, 40, 75, 150 and 500 nM; 15 mins

Applications

In NIH 3T3 and L1 fibroblasts, VO-Ohpic Trihydrate dose-dependently increased Akt phosphorylation at site Ser473 and Thr308. This effect reached saturation at 75 nM.

Animal experiment [2]:

Animal models

In-vivo ischemia and reperfusion mouse model

Dosage form

10 µg/kg; i.p.

Caution: Product has not been fully validated for medical applications. For research use only.

Tel: (909) 407-4943 Fax: (626) 353-8530 E-mail: tech@glpbio.com

Address: 10292 Central Ave. #205, Montclair, CA, USA

Product Data Sheet

Applications Inhibition of PTEN by VO-Ohpic Trihydrate decreased left ventricular systolic pressure and heart rate before ischemia, but resulted in an increase in cardiac functional recovery and a decrease in myocardial infarct size after ischemia-reperfusion.

Other notes Please test the solubility of all compounds indoor, and the actual solubility may slightly differ with the theoretical value. This is caused by an experimental system error and it is normal.

References:

- [1]. Rosivatz E, Matthews J G, McDonald N Q, et al. A small-molecule inhibitor for phosphatase and tensin homologue deleted on chromosome 10 (PTEN). ACS chemical biology, 2006, 1(12): 780-790.
- [2]. Zu L, Shen Z, Wesley J, Cai ZP. PTEN inhibitors cause a negative inotropic and chronotropic effect in mice. Eur J Pharmacol. 2011 Jan 10;650(1):298-302.

Background

VO-Ohpic is a highly selective small-molecule inhibitor of phosphatase and tensin homologue deleted on chromosome 10 (PTEN) with IC₅₀ value of 35 nM [1].

Many research studies show that the lipid phosphatase activity of PTEN has certain cellular impacts, such as inhibition of proliferation, survival and regulation of insulin signaling. Meanwhile, the inhibition of PTEN's lipid phosphatase activity increases glucose uptake triggered by the increase of PtdIns (3, 4, 5) P₃. These suggest that small-molecule inhibitor of PTEN may have the potential of enhancing insulin sensitivity and overcoming insulin resistance, which would be beneficial for the development of diabetes therapeutics. VO-Ohpic is a specific vanadium-based inhibitor screened out from a range of synthesized vanadates and bpV complexes. [1]

In vitro, VO-Ohpic inhibited the lipid phosphatase activity of recombinant PTEN with IC₅₀ value of 35 nM. It was highly selective against PTEN over other recombinant phosphatases including CBPs, SopB, myotubularin, SAC1 and PTP-β. It inhibited CBPs and SopB with IC₅₀ values in micromolar range and high nanomolar range, respectively. In NIH 3T3 and L1 fibroblasts, VO-Ohpic dose-

Caution: Product has not been fully validated for medical applications. For research use only.

Tel: (909) 407-4943 Fax: (626) 353-8530 E-mail: tech@glpbio.com

Address: 10292 Central Ave. #205, Montclair, CA, USA

Product Data Sheet

dependently increased Akt phosphorylation at site Ser473 and Thr308. This effect reached saturation at 75 nM. VO-OHpic had no effect on insulin-stimulated tyrosine phosphorylation at concentrations up to 10 μ M. Besides that, VO-OHpic treatment was found to cause the functional activation of Akt, demonstrated by a corresponding reduction of the transcriptional activity of FoxO3a [1].

In mice bearing MDA PCa-2b cell xenografts, administration of VO-OHpic showed significant tumor growth suppression. Moreover, long term treatment of VO-OHpic resulted in an increased survival of the treated animals. The tumors treated with VO-OHpic displayed increased β -gal staining and decreased Ki-67 staining compared with the untreated control tumors [2].

References:

[1] Rosivatz E, Matthews J G, McDonald N Q, et al. A small-molecule inhibitor for phosphatase and tensin homologue deleted on chromosome 10 (PTEN). *ACS chemical biology*, 2006, 1(12): 780-790.

[2] Alimonti A, Nardella C, Chen Z, et al. A novel type of cellular senescence that can be enhanced in mouse models and human tumor xenografts to suppress prostate tumorigenesis. *The Journal of clinical investigation*, 2010, 120(3): 681.

Caution: Product has not been fully validated for medical applications. For research use only.

Tel: (909) 407-4943 Fax: (626) 353-8530 E-mail: tech@glpbio.com

Address: 10292 Central Ave. #205, Montclair, CA, USA