Vildagliptin

Cat. No.: HY-14291

CAS No.: 274901-16-5

Molecular Formula: $C_{17}H_{25}N_3O_2$

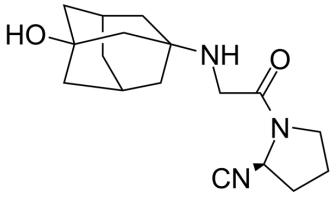
Molecular Weight: 303.4

Target: Dipeptidyl Peptidase; Ferroptosis; Apoptosis

Pathway: Metabolic Enzyme/Protease; Apoptosis

Storage:

Powder	-20°C	3 years
	4°C	2 years
In solvent	-80°C	2 years
	-20°C	1 year



SOLVENT & SOLUBILITY

In Vitro

H_2O : 50 mg/mL (164.80 mM; Need ultrasonic)

Preparing Stock Solutions	Solvent / Mass / Concentration	1 mg	5 mg	10 mg
	1 mM	3.2960 mL	16.4799 mL	32.9598 mL
	5 mM	0.6592 mL	3.2960 mL	6.5920 mL
	10 mM	0.3296 mL	1.6480 mL	3.2960 mL

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

In Vivo

1. Add each solvent one by one: PBS
   Solubility: 100 mg/mL (329.60 mM); Clear solution; Need ultrasonic and warming and heat to 60°C

BIOLOGICAL ACTIVITY

Description

Vildagliptin (LAF237) is a potent, stable, selective dipeptidyl peptidase IV (DPP-IV) inhibitor with an IC_{50} of 3.5 nM in human Caco-2 cells. Vildagliptin possesses excellent oral bioavailability and potent antihyperglycemic activity[1].

IC_{50} & Target

IC50: 3.5 nM (DPP-IV, in human Caco-2 cells)[1]

In Vitro

Vildagliptin promotes beta cell survival by inhibiting cell apoptosis. Vildagliptin also promotes cell proliferation[2].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

In Vivo

Vildagliptin (35 mg/kg; once daily by oral gavage) increases plasma active GLP-1 levels in islets of db/db mice[2].

Vildagliptin (10 μmol/kg; orally) significantly decreases glucose excursions and stimulate insulin secretion in obese male Zucker rats[1].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Animal Model:	Male db/db mice (BKS) and wildtype mice[2]
Dosage:	35 mg/kg
Administration:	Oral gavage; once daily; for 6 weeks
Result:	Increased plasma active GLP-1 levels (22.63±1.19 vs. 11.69±0.44).

Animal Model:	Obese male Zucker rats[1]
Dosage:	10 μmol/kg (Pharmacokinetic Analysis)
Administration:	Orally
Result:	Significantly decreased glucose excursions and stimulate insulin secretion.

CUSTOMER VALIDATION

- Cancer Lett. 2018 Apr 28;420:26-37.
- Cell Rep. 2023 Feb 28.
- Int J Mol Sci. 2022, 23(22), 14101
- J Biol Chem. 2018 Dec 7;293(49):18864-18878.

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REFERENCES

[1]. Villhauer EB, et al. 1-[[(3-hydroxy-1-adamantyl)amino]acetyl]-2-cyano-(S)-pyrrolidine: a potent, selective, and orally bioavailable dipeptidyl peptidase IV inhibitor with antihyperglycemic properties. J Med Chem. 2003 Jun 19;46(13):2774-89.

[2]. Wu YJ, et al. Dipeptidyl peptidase-4 inhibitor, vildagliptin, inhibits pancreatic beta cell apoptosis in associationwith its effects suppressing endoplasmic reticulum stress in db/db mice. Metabolism. 2015 Feb;64(2):226-35.

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