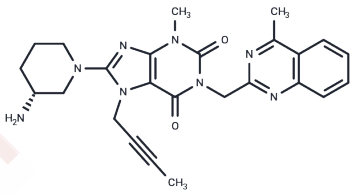
Data Sheet (Cat.No.T0191)

TargetMol

Linagliptin

Chemical Properties



CAS No. : 668270-12-0

Formula: C25H28N8O2

Molecular Weight: 472.54

Appearance: no data available

Storage: keep away from direct sunlight,store under nitrogen
Powder: -20°C for 3 years | In solvent: -80°C for 1 year

Biological Description

Description	Linagliptin (BI 1356) is a potent, orally bioavailable dihydropurinedione-based inhibitor of dipeptidyl peptidase 4 (DPP-4), with hypoglycemic activity.
Targets(IC50)	Ferroptosis,Proteasome,DPP-4,Autophagy
In vitro	Linagliptin shows a potent inhibition effect against DPP-4 in vitro and a low affinity for hERG channel and M1 receptor (IC50 295 nM). [1] Linagliptin acts as a competitive inhibitor with a Ki of 1 nM, and also shows 10,000-fold more selectivity for DPP-4 than DPP-8, DPP-9, amino-peptidases N and P, prolyloligopeptidase, trypsin, plasmin, and thrombin, and 90-fold more selectivity than fibroblast activation protein in vitro. [2]
In vivo	In male Wistar rats, Beagle dogs, and Rhesus monkeys, Linagliptin exhibits highly efficacious, long-lasting, and potent inhibitory activity against DPP-4 with over 70% inhibition for all three species after oral administration of 1 mg/kg. In db/db mice, oral administration of Linagliptin 45 min before an oral glucose tolerance test reduces plasma glucose excursion in a dose-dependent manner, achieving 15% inhibition at 0.1 mg/kg and 66% inhibition at 1 mg/kg. [1] By inhibiting DPP-4 activity, Linagliptin also reduces the expression of the proinflammatory markers cyclooxygenase-2 and macrophage inflammatory protein-2, and enhances myofibroblast formation in healing wounds from ob/ob mice. [3]
Kinase Assay	EDTA plasma (20 μL) is diluted with 30 μL of DPP-4 assay buffer (100 mM Tris and 100 mM NaCl, adjusted to pH 7.8 with HCl) and mixed with 50 μL of H-Ala-Pro-7-amido-4-trifluoromethylcoumarin. The 200 mM stock solution in dimethylformamide is diluted 1:1000 with water to yield a final concentration of 100 μM. The plate is incubated at room temperature for 10 min, and fluorescence in the wells is determined by using a Victor 1420 Multilabel Counter at an excitation wavelength of 405 nm and an emission wavelength of 535 nm. For the detection of DPP-4 activity in wound lysates, 100 μg of protein from the respective wound lysates are used instead of 20 μL of plasma. Active GLP-1 is also detected from 100 μg of respective wound tissue samples and analyzed by using the Mouse/Rat Total Active GLP-1 Assay Kit.
Cell Research	A total of 4.0×107 keratinocytes per well are seeded into 24-well plates. After reaching 50% confluence, cells are starved for 24 h with DMEM. Proliferation of cells is assessed by using 1 μCi/mL of [3H]methyl-thymidine in DMEM in the presence of 10% fetal bovine serum and increasing concentrations of linagliptin (3, 30, 300, or 600 nM) for 24 h. Cells are then washed twice with phosphate-buffered saline and incubated in 5%

trichloroacetic acid at 4°C for 30 min, and the DNA is solubilized in 0.5mol/LNaOH for 30 min at 37°C. Finally, [3H]thymidine incorporation is determined.

Solubility Information

Solubility	DMSO: 5.63 mg/mL (11.9 mM),Sonication is recommended. H2O: < 1 mg/mL (insoluble or slightly soluble), Ethanol: 1 mg/mL (2.12 mM),Sonication is recommended. (< 1 mg/ml refers to the product slightly soluble or insoluble)

Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	2.1162 mL	10.5811 mL	21.1622 mL
5 mM	0.4232 mL	2.1162 mL	4.2324 mL
10 mM	0.2116 mL	1.0581 mL	2.1162 mL
50 mM	0.0423 mL	0.2116 mL	0.4232 mL

Please select the appropriate solvent to prepare the stock solution, according to the solubility of the product in different solvents. Please use it as soon as possible.

Reference

Eckhardt M, et al. J Med Chem. 2007, 50(26), 6450-6453.
Thomas L, J Pharmacol Exp Ther. 2008, 325(1), 175-182.
Schürmann C, et al. J Pharmacol Exp Ther. 2012, 342(1), 71-8.