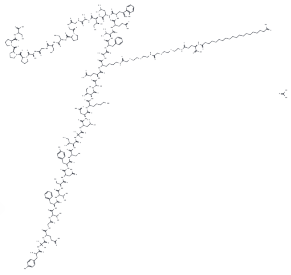
Data Sheet (Cat.No.TP1111L)

TargetMol

Tirzepatide Acetate(2023788-19-2 free base)

Chemical Properties



CAS No. :

Formula: C227H352N48O70

Molecular Weight: 4873.5

Storage: Keep away from moisture
Powder: -20°C for 3 years | In solvent: -80°C for 1 year
Actual storage temperature shall be subject to the COA.

Biological Description

Description	Tirzepatide (LY3298176) Acetate (2023788-19-2 free base) is a new molecule that can control blood glucose levels by combining dual agonism of glucose-dependent insulinotropic polypeptide (GIP) and glucagon-like peptide-1 (GLP-1) receptors.[3]
Targets(IC50)	Glucagon Receptor
In vitro	**METHODS**: Tirzepatide (LY3298176) (1, 3, 10, 30 nM) was used to treat GIPR or GLP-1R receptors, and Tirzepatide (30 μM, 30 nM) was used to treat cells expressing recombinant GIPR or GLP-1R to investigate whether it is effective on both GIPR and GLP-1R. **RESULTS** In receptor binding studies, LY3298176 had high affinity to either receptor (GIPR Ki = 0.135, SEM = 0.020 nM; GLP-1R Ki = 4.23, SEM = 0.23 nM); for GIPR, the affinity was comparable to that of native GIP, while for GLP-1R, the affinity was approximately 5-fold weaker than that of native GLP-1. In signaling studies using the same HER2 receptors, LY3298176 potently stimulated cAMP accumulation at either receptor (GIPR EC50 = 0.0224, SEM = 0.0053 nM; GLP-1R EC50 = 0.934, SEM = 0.068 nM).[1] **METHODS**: Representative confocal images of Tirzepatide (LY3298176)-induced receptor internalization and EGFP fluorescence in HA-GIPR-EGFP cells treated with Tirzepatide (LY3298176) (100 nM). **RESULTS** Tirzepatide (LY3298176) was weak in inducing internalization, resulting in a maximal effect of only 40% of that observed with GLP-1. Treatment with Tirzepatide (LY3298176) resulted in minimal reduction in cell surface labeling and only a slight increase in punctate localization of the receptor in the cytoplasmic/perinuclear region. [2]
In vivo	**METHODS**: Tirzepatide (LY3298176) (30nmol/kg， i.p) was used to evaluate in vivo glycemic control using an intraperitoneal glucose tolerance test (ipGTT) in normal and receptor-deficient mice. **RESULTS** Tirzepatide (LY3298176) enhanced insulin secretion in three pancreatic islet genotypes. Tirzepatide (LY3298176) can induce glucose-dependent insulin secretion in vivo through GIPR or GLP-1R and improve glucose tolerance in mice. [1]

Solubility Information

Solubility	DMSO: 245 mg/mL (50.27 mM),Sonication is recommended. H2O: < 1 mg/mL (insoluble or slightly soluble) (< 1 mg/ml refers to the product slightly soluble or insoluble)

Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	0.2052 mL	1.026 mL	2.0519 mL
5 mM	0.041 mL	0.2052 mL	0.4104 mL
10 mM	0.0205 mL	0.1026 mL	0.2052 mL
50 mM	0.0041 mL	0.0205 mL	0.041 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.

Note: The dilution table applies only to solid products. For liquid products, please calculate the stock solution based on the stated concentration and/or density.

Reference

Coskun T, et al. LY3298176, a novel dual GIP and GLP-1 receptor agonist for the treatment of type 2 diabetes mellitus: From discovery to clinical proof of concept. Mol Metab. 2018 Dec;18:3-14.
Willard FS, et al. Tirzepatide is an imbalanced and biased dual GIP and GLP-1 receptor agonist. JCI Insight. 2020 Sep 3;5(17):e140532.
Forzano I,et al. Tirzepatide: A Systematic Update. Int J Mol Sci. 2022 Nov 23;23(23):14631.