

Product data sheet



MedKoo Cat#: 333103 Name: Tirzepatide CAS#: 2023788-19-2 Chemical Formula: C ₂₂₅ H ₃₄₈ N ₄₈ O ₆₈ Exact Mass: 4810.5249 Molecular Weight: 4813.53		
Product supplied as:		Powder
Purity (by HPLC):		≥ 98%
Shipping conditions		Ambient temperature
Storage conditions:		Powder: -20°C 3 years; 4°C 2 years. In solvent: -80°C 3 months; -20°C 2 weeks.

1. Product description:

Tirzepatide, also known as LY 3298176, is a dual glucose-dependent insulinotropic polypeptide (GIP) and glucagon-like peptide-1 (GLP-1) receptor agonist. Tirzepatide has a greater affinity to GIP receptors than to GLP-1 receptors, and this dual agonist behavior has been shown to produce greater reductions of hyperglycemia compared to a selective GLP-1 receptor agonist. Signaling studies reported that tirzepatide mimics the actions of natural GIP at the GIP receptor. Tirzepatide was approved for improving blood sugar control in adults with type 2 diabetes, as an addition to diet and exercise.

2. CoA, QC data, SDS, and handling instruction

SDS and handling instruction, CoA with copies of QC data (NMR, HPLC and MS analytical spectra) can be downloaded from the product web page under “QC And Documents” section. Note: copies of analytical spectra may not be available if the product is being supplied by MedKoo partners. Whether the product was made by MedKoo or provided by its partners, the quality is 100% guaranteed.

3. Solubility data

Solvent	Max Conc. mg/mL	Max Conc. mM
To be determined	To be determined	To be determined

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	0.21 mL	1.04 mL	2.08 mL
5 mM	0.04 mL	0.21 mL	0.42 mL
10 mM	0.02 mL	0.10 mL	0.21 mL
50 mM	0.004 mL	0.02 mL	0.04 mL

5. Molarity Calculator, Reconstitution Calculator, Dilution Calculator

Please refer the product web page under section of “Calculator”

6. Recommended literature which reported protocols for in vitro and in vivo study

In vitro study

- El K, Douros JD, Willard FS, Novikoff A, Sargsyan A, Perez-Tilve D, Wainscott DB, Yang B, Chen A, Wothe D, Coupland C, Tschöp MH, Finan B, D'Alessio DA, Sloop KW, Müller TD, Campbell JE. The incretin co-agonist tirzepatide requires GIPR for hormone secretion from human islets. *Nat Metab.* 2023 Jun;5(6):945-954. doi: 10.1038/s42255-023-00811-0. Epub 2023 Jun 5. PMID: 37277609; PMCID: PMC10290954.

In vivo study

- Lee CJ, Mao H, Thieu VT, Landó LF, Thomas MK. Tirzepatide as Monotherapy Improved Markers of Beta-cell Function and Insulin Sensitivity in Type 2 Diabetes (SURPASS-1). *J Endocr Soc.* 2023 Apr 22;7(5):bvad056. doi: 10.1210/endsoc/bvad056. PMID: 37153701; PMCID: PMC10157777.
- Heise T, DeVries JH, Urva S, Li J, Pratt EJ, Thomas MK, Mather KJ, Karanikas CA, Dunn J, Haupt A, Milicevic Z, Coskun T. Tirzepatide Reduces Appetite, Energy Intake, and Fat Mass in People With Type 2 Diabetes. *Diabetes Care.* 2023 May 1;46(5):998-1004. doi: 10.2337/dc22-1710. PMID: 36857477; PMCID: PMC10154650.

7. Bioactivity

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Biological target:

Tirzepatide differentially induces internalization of the GIP and GLP-1 receptors with EC50 values of 18.2 nM and 18.1 nM, respectively.

In vitro activity

In mouse islets, tirzepatide stimulates insulin secretion predominantly through the GLP-1R. However, in human islets, antagonizing GIPR activity consistently decreases the insulin response to tirzepatide. Tirzepatide stimulates islet hormone secretion from human islets through both incretin receptors.

Reference: Nat Metab. 2023 Jun;5(6):945-954. <https://pubmed.ncbi.nlm.nih.gov/37277609/>

In vivo activity

As monotherapy for early type 2 diabetes, tirzepatide achieved significant improvements in biomarkers of both pancreatic beta-cell function and insulin sensitivity.

Reference: J Endocr Soc. 2023 Apr 22;7(5):bvad056. <https://pubmed.ncbi.nlm.nih.gov/37153701/>

Note: The information listed here was extracted from literature. MedKoo has not independently retested and confirmed the accuracy of these methods. Customer should use it just for a reference only.