Product Data Sheet

Product Name: Tirzepatide sodium
Cat. No.: GC79326

Chemical Properties

Cas. No.			
Formula	$C_{225}H_{348}N_{48}O_{68}.xNa$	M.Wt	4813.45
Solubility	H_2O: 50 mg/mL (Need ultrasonic)	Storage	Sealed storage, away from moisture
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.		

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

Tyr-{Aib}-Glu-Gly-Thr-Phe-Thr-Ser-Asp-Tyr-Ser-Ile-{Aib}-Leu-Asp-Lys-Ile-Ala-Gln-{C_{20} diacid-gamma-Glu-$(AEEA)_2$-Lys}-Ala-Phe-Val-Gln-Trp-Leu-Ile-Ala-Gly-Gly-Pro-Ser-Ser-Gly-Ala-Pro-Pro-Pro-Ser-NH_2 (sodium salt)

Background

Tirzepatide sodium (LY3298176 sodium) is a dual glucose-dependent insulinotropic polypeptide (GIP) and glucagon-like peptide-1 (GLP-1) receptor agonist. Tirzepatide sodium exerts anti-apoptotic and pro-differentiation effects via the pAkt / CREB / BDNF cascade and miRNA in neurons; in the heart, it promotes BCAA catabolism and inhibits the mTOR pathway by mediating the dephosphorylation of BCKDHA; meanwhile, it effectively reduces insulin and leptin levels and suppresses inflammatory responses at the systemic level. Tirzepatide sodium can be used for research on myocardial infarction, colon cancer, diabetes, diabetic cognitive impairment, neurodegeneration, diabetes-related neuropathy, and obesity [1] [2] [3] [4] [5].

In Vivo, Tirzepatide (LY3298176) (1.35 mg/kg; i.p.; once weekly; for 15 weeks) sodium improves spatial learning and memory impairment, inhibits hippocampal Aβ aggregation, and alleviates

neuroinflammation in diabetic rat models induced by a high-fat diet (HF diet) combined with STZ [1]. Tirzepatide sodium (1.35 mg/kg; i.p.; once weekly; for 15 weeks) induces mild metabolic and molecular changes in healthy rats without impairing spatial learning or memory abilities[1]. Tirzepatide sodium (10 nM/kg; s.c.; once daily; for 28 days) significantly reduces body weight, food intake, serum insulin and leptin levels, and indirectly inhibits tumor growth in a diet-induced obese (DIO) MC38 colon cancer mouse model[3]. Tirzepatide sodium (10 nM/kg; s.c.; once daily; for 14 days) significantly reduces body weight, food intake, serum insulin and leptin levels in diet-induced obese mouse models[3]. Tirzepatide (10 nM/kg/day; i.p.; once daily; for 14 consecutive days) exerts protective effects in a mouse model of myocardial infarction (MI) induced by coronary artery ligation, including reducing mortality, decreasing myocardial infarction size, promoting branched-chain amino acid (BCAA) catabolism, and facilitating early fibrotic repair[4].

In Vitro, Tirzepatide (LY3298176) (0.2 μM; 7 days) sodium has no effect on the proliferation of human neuroblastoma SHSY5Y cells exposed to normoglycemic or hyperglycemic conditions, and upregulates the expression of nerve growth markers, differentiation markers, and glucose transporters[2]. Tirzepatide (0.2 μM; 7 days) sodium reverses high glucose-induced apoptosis and significantly reduces the BAX/Bcl-2 protein ratio in SH-SY5Y cells[2]. Tirzepatide (35-100 nM; 96 h) sodium exerts no direct effect on the proliferation of MC38 mouse colon cancer cells in vitro[3]. Tirzepatide sodium binds to BCKDHA, a key enzyme in branched-chain amino acid (BCAA) catabolism[4].

References:
[1]. Guo X, et al. Tirzepatide ameliorates spatial learning and memory impairment through modulation of aberrant insulin resistance and inflammation response in diabetic rats. Frontiers in pharmacology. 2023;14:1146960.
[2]. Fontanella RA, et al. Tirzepatide prevents neurodegeneration through multiple molecular pathways. Journal of translational medicine. 2024 Jan 29;22(1):114.
[3]. Huang, L., et al. Tirzepatide inhibits tumor growth in mice with diet-induced obesity. bioRxiv, 2023-06.
[4]. Chen M, et al. Glucose-dependent insulinotropic polypeptide/glucagon-like peptide 1 receptor agonist tirzepatide promotes branched chain amino acid catabolism to prevent myocardial infarction in non-diabetic mice. Cardiovascular research. 2025 Apr 29;121(3):454-467.

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[5]. Hoffmann K, et al. The efficacy and safety of dual GIP/GLP1 receptor agonists (tirzepatide) in diabetes and obesity: a systematic review and network meta-analysis. Expert opinion on drug safety. 2026 Jun;25(6):1031-1046.

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