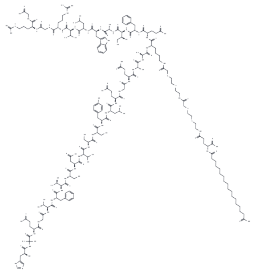
Data Sheet (Cat.No.T19850)

TargetMol

Semaglutide

Chemical Properties



CAS No. : 910463-68-2

Formula: C187H291N45O59

Molecular Weight: 4114

Storage: Keep away from moisture,Store at low temperature
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	Semaglutide is a long-acting, selective, competitive GLP-1R agonist and a long-acting analog of human glucagon-like peptide-1, exhibiting potent hypoglycemic, weight-loss, cardioprotective, and neuroprotective effects. Upon activation of the GLP-1R, semaglutide promotes insulin secretion, inhibits gastric emptying and appetite, while also enhancing autophagy and suppressing oxidative stress and apoptosis. Semaglutide also plays a role in regulating mitochondrial function and lipid metabolism. Semaglutide is being investigated for use in type 2 diabetes, obesity, Parkinson's disease, metabolic and fatty liver diseases (MASLD), and other neurodegenerative and liver diseases, as well as in cancer research.
Targets(IC50)	Apoptosis,Bcl-2 Family,Autophagy,Glucagon Receptor,IGF-1R,p38 MAPK
In vitro	**Methods**: Cell viability was assessed using the MTT assay 24 hours after treating SH-SY5Y cells with 75 μM 6-OHDA and 1-100 nM Semaglutide. **Results**: 6-OHDA significantly reduced cell viability, while Semaglutide significantly reversed the damage. [2]
In vivo	**Methods**: Mice made obese by a high-fat diet (DIO mice) were administered subcutaneous injections of Semaglutide (1, 3, 10, 30, 100 nmol/kg). Body weight, food intake, and body composition were measured 21 days later. **Results**: Semaglutide reduced body weight and food intake in a dose-dependent manner; the highest dose (100 nmol/kg) resulted in a 22% decrease in body weight (from 43.6 g to 34.8 g). [1] **Methods**: A doxorubicin-induced (5 mg/kg/week, intraperitoneal injection for 4 weeks) cardiac toxicity model was established in C57/BL6J mice. Semaglutide (12 μg/kg/day, subcutaneous injection for 6 weeks) was administered as an intervention, and cardiac function was assessed via echocardiography and invasive hemodynamic monitoring. **Results**: Doxorubicin caused impaired cardiac function and elevated myocardial injury markers in mice. Semaglutide significantly improved cardiac function, reduced injury markers, and increased mouse survival rates. Furthermore, Semaglutide inhibited oxidative stress and repaired mitochondrial dysfunction. [3] **Methods**: A Parkinson's disease model was established in SD rats via 6-OHDA-induced unilateral medial forebrain bundle injury, followed by intraperitoneal administration of 25 nmol/kg Semaglutide (once every 2 days for a total of 31 days). **Results**: Semaglutide significantly improved neurological damage in the model rats. [4]

Solubility Information

Solubility	H2O: 10 mg/mL (2.43 mM),when pH is adjusted to 14 with NaOH. Sonication and heating are recommended. H2O: insoluble DMSO: 50 mg/mL (12.15 mM),Sonication is recommended. H2O: 5 mg/mL (1.22 mM),when pH is adjusted to 1 with HCl. Sonication and heating are recommended. (< 1 mg/ml refers to the product slightly soluble or insoluble)

Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	0.2431 mL	1.2154 mL	2.4307 mL
5 mM	0.0486 mL	0.2431 mL	0.4861 mL
10 mM	0.0243 mL	0.1215 mL	0.2431 mL
50 mM	0.0049 mL	0.0243 mL	0.0486 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

Gabery S, et al. Semaglutide lowers body weight in rodents via distributed neural pathways. JCI Insight. 2020 Mar 26;5(6):e133429.
Wang B, Zhu X, Yu S, et al.Roflumilast ameliorates GAN diet-induced non-alcoholic fatty liver disease by reducing hepatic steatosis and fibrosis in ob/ob mice.Biochemical and Biophysical Research Communications.2024: 150170.
Stoicovy R A, Cora N, Perez A, et al.Cyclic adenosine monophosphate critically modulates cardiac GLP-1 receptor's anti-inflammatory effects.Inflammation Research.2024: 1-14.
Liu DX, et al. Semaglutide Protects against 6-OHDA Toxicity by Enhancing Autophagy and Inhibiting Oxidative Stress. Parkinsons Dis. 2022 Jul 13;2022:6813017.
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Zhang L, et al. DA5-CH and Semaglutide Protect against Neurodegeneration and Reduce α-Synuclein Levels in the 6-OHDA Parkinson's Disease Rat Model. Parkinsons Dis. 2022;2022:1428817. Published 2022 Nov 14.
Pontes-da-Silva, R.M.,et al. Obese mice weight loss role on nonalcoholic fatty liver disease and endoplasmic reticulum stress treated by a GLP-1 receptor agonist. Int J Obes 46, 21–29 (2022).
Withaar, C, et al. The Cardioprotective Effects of Semaglutide Exceed Those of Dietary Weight Loss in Mice With HFpEF. J Am Coll Cardiol Basic Trans Science. 2023 Oct, 8 (10) 1298–1314.
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Tel:781-999-4286 E_mail:info@targetmol.com Address:34 Washington Street,Wellesley Hills,MA 02481