Product Data Sheet

Product Name: Retatrutide
Cat. No.: GC69415

Chemical Properties

Cas. No.	2381089-83-2		
Formula	$C_{221}H_{342}N_{46}O_{68}$	M.Wt	4731.33
Solubility	H2O : 33.33 mg/mL (7.04 mM; ultrasonic and adjust pH to 7 with NaOH)	Storage	Store at -20°C

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.

Structure

Retatrutide

Protocol

Animal experiment [1]:

Animal models: Male C57BL/KSJ diabetic db/db and db/m mice

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Preparation Method	Seven-week-old male C57BL/KSJ diabetic db/db and db/m mice were housed at ambient temperature of 21±2°C and humidity of 45±10% on a 12-hour light/dark cycle. Mice received sterilized standard food and water AD libitum. Mice were adaptively cultured for 1 week before the start of the experiment. Eight-week-old mice were randomly divided into five groups (n=6): db/m group, db/db group, db/db+Lira group, db/db+Tirz group and db/db+Reta group. Each treatment arm was divided into two cages with three mice per cage. Mice in db/db+Lira, db/db+Tirz and db/db+Reta groups were subcutaneously injected with 10nM/kg/day liraglutide, Tirzepatide, and Retatrutide daily for 10 weeks. Mice in db/m and db/db groups were intraperitoneally injected with the same amount of normal saline. The drug dose was adjusted weekly during the study according to the changes in body weight of mice. At the end of the experiment, mice were euthanized by cervical dislocation. The kidney tissue was removed and rinsed with normal saline. Tissue samples were fixed in 4% paraformaldehyde, dehydrated in ethanol, and embedded in paraffin. 3 μm sections were prepared and subjected to hematoxylin-eosin (HE) staining and periodic acid Schiff (PAS) staining, respectively. The staining results were observed under a light microscope at 200× and 400× magnification.
Dosage form	10nmol/kg/day for 10 days; i.p.
Applications	Retatrutide treatment significantly reduced the body weight of mice, improved renal function, and inhibited the expression of proinflammatory cytokines (TNF-α, caspase-1, and NLRP3) and profibrotic factors (fibronectin, α-SMA, and collagen I) in the kidney of mice.

References:

[1]Ma J, Hu X, Zhang W, et al. Comparison of the effects of Liraglutide, Tirzepatide, and Retatrutide on diabetic kidney disease in db/db mice[J]. Endocrine, 2025, 87(1): 159-169.

Background

Retatrutide exhibits triple agonist activity against GCGR, GIPR, and GLP-1R, with EC_{50} values of

5.79, 0.0643, and 0.775nM, respectively[1]. Retatrutide has been used in studies for the treatment of diabetes and obesity[2].

In vivo, Retatrutide treatment (10nmol/kg/day; i.p.) for 10 weeks significantly improved liver and kidney function in db/db mice with diabetic kidney disease and inhibited the expression of pro-inflammatory cytokines (TNF-α, caspase-1 and NLRP3) and pro-fibrotic factors (fibronectin, α-SMA and collagen I) in the kidney of mice[3]. Treatment with Retatrutide at a dose of 30nmol/kg/day (i.p.) for 20 days effectively reduced body weight, reduced fasting plasma glucose levels, reduced immunosuppression and increased antigen presentation in mice with lung adenocarcinoma, resulting in a reduction in tumor burden[4]. In triple-negative breast cancer (TNBC) xenograft mouse model, intraperitoneal injection of Retatrutide (5mg/kg) twice weekly for 5 weeks downregulated hexosamine biosynthetic pathway (HBP) activity and YAP protein levels, decreased the tumor volume, and enhanced the efficacy of chemotherapy[5].

References:
[1] Coskun T, Urva S, Roell W C, et al. LY3437943, a novel triple glucagon, GIP, and GLP-1 receptor agonist for glycemic control and weight loss: from discovery to clinical proof of concept[J]. Cell metabolism, 2022, 34(9): 1234-1247. e9.
[2] Doggrell S A. Is retatrutide (LY3437943), a GLP-1, GIP, and glucagon receptor agonist a step forward in the treatment of diabetes and obesity?[J]. Expert opinion on investigational drugs, 2023, 32(5): 355-359.
[3] Ma J, Hu X, Zhang W, et al. Comparison of the effects of Liraglutide, Tirzepatide, and Retatrutide on diabetic kidney disease in db/db mice[J]. Endocrine, 2025, 87(1): 159-169.
[4] Marathe S J, Grey E W, Bohm M S, et al. Incretin triple agonist retatrutide (LY3437943) alleviates obesity-associated cancer progression[J]. npj Metabolic Health and Disease, 2025, 3(1): 10.
[5] Cui X, Zhu Y, Zeng L, et al. Pharmacological Dissection Identifies Retatrutide Overcomes the Therapeutic Barrier of Obese TNBC Treatments through Suppressing the Interplay between Glycosylation and Ubiquitylation of YAP[J]. Advanced Science, 2025: 2407494.