

Product Data Sheet

Product Name: GLP-1(7-37)

Cat. No.: GC30058

Chemical Properties

Cas. No. 106612-94-6

SMILES His-Ala-Glu-Gly-Thr-Phe-Thr-Ser-Asp-Val-Ser-Ser-Tyr-Leu-Glu-Gly-Gln-Ala-Ala-Lys-Glu-Phe-Ile-Ala-Trp-Leu-Val-Lys-Gly-Arg-Gly

Formula $C_{151}H_{228}N_{40}O_{47}$ M.Wt 3355.67

Solubility Water : 30 mg/mL (8.94 mM) Storage Store at -20°C, protect from light

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

HAEGTFTSDVSSYLEGQAAKEFIAWLVKGRG

Protocol

Cell experiment [1]:

Cell lines Beta-TC-1 cell

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

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Beta-TC-1 cells were grown in RPMI medium supplemented with 10% fetal bovine serum, 5% horse serum, 100U/ml penicillin, and 100µg/ml streptomycin in a 95% O₂, and 5% CO₂ humidified atmosphere. Two days before the experiment, approximately 5×10^5 cells were transferred to each well of 24-well Preparation Method plates. At the beginning of the cells were washed twice with KRB buffer and incubated in the medium (1ml) for 60min (37°C). Then, the buffer was changed to a buffer (300µl) containing the GLP-1(7-37) at 10nM for 30min. The entire supernatant was lyophilized and reconstituted in assay buffer for cAMP determination.

Reaction Conditions 10nM; 30min

Applications GLP-I(7-37) treatment promoted cAMP formation in Beta-TC-1 cells.

Animal experiment [2]:

Animal models Zucker diabetic fatty (ZDF) rat

Preparation Method ZDF rats were housed in an environmentally controlled room (21°C with a 12-hour light/dark cycle) with food (standard rodent chow) and water available ad libitum. Fed ZDF rats were intravenously infused for 2 hours with GLP-1(7-37) at 5pmol/min/kg. Blood samples were taken from the carotid artery catheter every 15 minutes for plasma glucose and at 0, 15, 30, 60, and 120 minutes for determinations of insulin.

Dosage form 5pmol/min/kg for 2h; i.v.

Applications GLP-I(7-37) treatment increased plasma insulin concentration and normalized the plasma glucose concentration in rats.

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References:

- [1] Fehmann H C, Habener J F. Functional receptors for the insulinotropic hormone glucagon-like peptide-1 (7–37) on a somatostatin secreting cell line[J]. FEBS letters, 1991, 279(2): 335-340.
- [2] Hargrove D M, Nardone N A, Persson L M, et al. Glucose-dependent action of glucagon-like peptide-1 (7-37) in vivo during short-or long-term administration[J]. Metabolism, 1995, 44(9): 1231-1237.

Background

GLP-1(7-37) is a truncated glucagon-like peptide with an EC₅₀ value of 0.9 ± 0.1 nM for GLP-1 receptors^[1]. GLP-1(7-37) can bind to a specific GLP-1 receptor (GLP-1R) on pancreatic beta cells and enhance glucose-stimulated insulin secretion^[2]. GLP-1(7-37) has been widely used as a model compound to develop a range of derivatives and GLP-1R agonists^[3].

In vitro, GLP-1(7-37) treatment at 10nM for 30min significantly promoted cAMP generation as well as insulin secretion in Beta-TC-1 cells^[4]. Pretreatment with 100nM GLP-1(7-37) for 3h enhanced the mitochondrial response to 25mM glucose stimulation in uninjured MitpHGV-MIN6 cells^[5]. Treatment with 100nM GLP-1(7-37) for 10 seconds increased intracellular free calcium ions ($[Ca^{2+}]_i$) in COS-7 cells expressing the GLP-1 receptor^[6].

In vivo, GLP-1(7-37) treatment (5pmol/min/kg) via intravenous infusion (2h) into Zucker diabetic fatty (ZDF) rats transiently increased plasma insulin concentrations and normalized blood glucose concentrations^[7]. Intravenous infusion of GLP-1(7-37) for 60 minutes (5pmol/min/kg) produced a transient increase in plasma insulin concentrations and a sustained slight decrease in blood glucose in fasted rats^[8].

References:

- [1] de Menth  re C S, Chavanieu A, Grassy G, et al. Structural requirements of the N-terminal region of GLP-1-[7-37]-NH₂ for receptor interaction and cAMP production[J]. European journal of medicinal chemistry, 2004, 39(6): 473-480.
- [2] Vahl T P, Paty B W, Fuller B D, et al. Effects of GLP-1-(7–36) NH₂, GLP-1-(7–37), and GLP-1-(9–36) NH₂ on intravenous glucose tolerance and glucose-induced insulin secretion in healthy

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- humans[J]. The Journal of Clinical Endocrinology & Metabolism, 2003, 88(4): 1772-1779.
- [3] Manandhar B, Ahn J M. Glucagon-like peptide-1 (GLP-1) analogs: recent advances, new possibilities, and therapeutic implications[J]. Journal of medicinal chemistry, 2015, 58(3): 1020-1037.
- [4] Fehmann H C, Habener J F. Functional receptors for the insulinotropic hormone glucagon-like peptide-I (7–37) on a somatostatin secreting cell line[J]. FEBS letters, 1991, 279(2): 335-340.
- [5] Ogata M, Iwasaki N, Ide R, et al. GLP-1-related proteins attenuate the effects of mitochondrial membrane damage in pancreatic β cells[J]. Biochemical and Biophysical Research Communications, 2014, 447(1): 133-138.
- [6] Wheeler M B, Lu M, Dillon J S, et al. Functional expression of the rat glucagon-like peptide-I receptor, evidence for coupling to both adenylyl cyclase and phospholipase-C[J]. Endocrinology, 1993, 133(1): 57-62.
- [7] Hargrove D M, Nardone N A, Persson L M, et al. Glucose-dependent action of glucagon-like peptide-1 (7-37) in vivo during short-or long-term administration[J]. Metabolism, 1995, 44(9): 1231-1237.
- [8] Hargrove D M, Nardone N A, Persson L M, et al. Comparison of the glucose dependency of glucagon-like peptide-1 (7–37) and glyburide in vitro and in vivo[J]. Metabolism, 1996, 45(3): 404-409.

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