Glucagon (1-29), bovine, human hydrochloride

Cat. No.:	HY-P0082A
CAS No.:	28270-04-4
Molecular Formula:	$C_{153}H_{225}N_{43}O_{49}S.ClH$
Molecular Weight:	3519.21
Sequence:	His-Ser-Gln-Gly-Thr-Phe-Thr-Ser-Asp-Tyr-Ser-Lys-Tyr-Leu-Asp-Ser-Arg-Arg-Ala-Gln-Asp-Phe-Val-Gln-Trp-Leu-Met-Asn-Thr
Sequence Shortening:	HSQGTFTSDYSKYLDSRRAQDFVQWLMNT
Target:	GCGR
Pathway:	GPCR/G Protein
Storage:	Please store the product under the recommended conditions in the Certificate of Analysis.

BIOLOGICAL ACTIVITY

Description

Glucagon (1-29), bovine, human, porcine hydrochloride is a peptide hormone, produced by pancreatic α-cells. Glucagon hydrochloride stimulates gluconeogenesis[1]. Glucagon (1-29), bovine, human, porcine hydrochloride activates HNF4α and increases HNF4α phosphorylation[2][3].

In Vitro

Upon binding to its receptor Gcgr, Glucagon activates cAMP-PKA signaling to stimulate hepatic glucose production (HGP) and cause hyperglycemia[1].
Glucagon stimulates both hepatic kisspeptin1 production and gluconeogenesis[1].
Glucagon (100 nM) represses CYP7A1 mRNA expression in human primary hepatocytes[3].
Glucagon (100 nM) increases phosphorylayion of HNF4α[3].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Western Blot Analysis[3]

Cell Line:	Human primary hepatocytes (H1211, HH1215)
Concentration:	100 nM
Incubation Time:	
Result:	Resulted in a marked increase in the amount of phosphorylated HNF4α.

In Vivo

Low-dose (20 μg/kg) Glucagon increases glycemia and does not stimulate insulin secretion in ambient-fed mice. High-dose (1 mg/kg) Glucagon lowers glycemia compared with PBS control and stimulates insulin secretion in ambient-fed mice[4].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Animal Model:	C57BL/6J mice (12- to 24-week-old)[4]
Dosage:	20 μg/kg and 1 mg/kg
Administration:	Administered by i.p. injection; 45 minutes

Result:	Low-dose (20 μg/kg) increased glycemia and did not stimulate insulin secretion. High-dose (1 mg/kg) lowered glycemia and stimulated insulin secretion.

CUSTOMER VALIDATION

- Cell Res. 2023 Apr;33(4):273-287.
- Nat Metab. 2022 Jan 6.
- Mol Cell. 2023 Feb 22;S1097-2765(23)00102-8.
- Proc Natl Acad Sci U S A. 2020 Feb 11;117(6):3144-3149.
- Phytomedicine. 2021 Mar;83:153487.

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REFERENCES

[1]. Song WJ, et al. Glucagon regulates hepatic kisspeptin to impair insulin secretion. Cell Metab. 2014 Apr 1;19(4):667-81.

[2]. Hirota K, et al. Hepatocyte nuclear factor-4 is a novel downstream target of insulin via FKHR as a signal-regulated transcriptional inhibitor. J Biol Chem. 2003 Apr 11;278(15):13056-60.

[3]. Song KH, et al. Glucagon and cAMP inhibit cholesterol 7alpha-hydroxylase (CYP7A1) gene expression in humanhepatocytes: discordant regulation of bile acid synthesis and gluconeogenesis. Hepatology. 2006 Jan;43(1):117-25.

[4]. Capozzi ME, et al. Glucagon lowers glycemia when β-cells are active. JCI Insight. 2019 Jul 23;5. pii: 129954.

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