

Glucagon 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:	HSQGTFTSDYSKYLDSTRRAQDFVQWLMNT
Target:	Glucagon Receptor
Pathway:	GPCR/G Protein
Storage:	Please store the product under the recommended conditions in the Certificate of Analysis.

BIOLOGICAL ACTIVITY

Description	Glucagon hydrochloride (Porcine glucagon hydrochloride) is a peptide hormone, produced by pancreatic α -cells. Glucagon hydrochloride stimulates gluconeogenesis ^[1] . Glucagon hydrochloride activates HNF4 α and increases HNF4 α phosphorylation ^{[2][3]} .								
In Vitro	<p>Upon binding to its receptor Gcgr, Glucagon activates cAMP-PKA signaling to stimulate hepatic glucose production (HGP) and cause hyperglycemia^[1].</p> <p>Glucagon stimulates both hepatic kisspeptin1 production and gluconeogenesis^[1].</p> <p>Glucagon (100 nM) represses CYP7A1 mRNA expression in human primary hepatocytes^[3].</p> <p>Glucagon (100 nM) increases phosphorylation of HNF4α^[3].</p> <p>MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p> <p>Western Blot Analysis^[3]</p> <table border="1"> <tr> <td>Cell Line:</td> <td>Human primary hepatocytes (H1211, HH1215)</td> </tr> <tr> <td>Concentration:</td> <td>100 nM</td> </tr> <tr> <td>Incubation Time:</td> <td></td> </tr> <tr> <td>Result:</td> <td>Resulted in a marked increase in the amount of phosphorylated HNF4α.</td> </tr> </table>	Cell Line:	Human primary hepatocytes (H1211, HH1215)	Concentration:	100 nM	Incubation Time:		Result:	Resulted in a marked increase in the amount of phosphorylated HNF4 α .
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In Vivo	<p>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].</p> <p>MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p> <table border="1"> <tr> <td>Animal Model:</td> <td>C57BL/6J mice (12- to 24-week-old)^[4]</td> </tr> <tr> <td>Dosage:</td> <td>20 μg/kg and 1 mg/kg</td> </tr> <tr> <td>Administration:</td> <td>Administered by i.p. injection; 45 minutes</td> </tr> </table>	Animal Model:	C57BL/6J mice (12- to 24-week-old) ^[4]	Dosage:	20 μ g/kg and 1 mg/kg	Administration:	Administered by i.p. injection; 45 minutes		
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Dosage:	20 μ g/kg and 1 mg/kg								
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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

- Proc Natl Acad Sci U S A. 2020 Feb 11;117(6):3144-3149.

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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 7 α -hydroxylase (CYP7A1) gene expression in human hepatocytes: 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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Caution: Product has not been fully validated for medical applications. For research use only.

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