

Pancreatic Polypeptide, rat

Cat. No.:	HY-P1532
CAS No.:	90419-12-8
Molecular Formula:	C ₁₉₅ H ₂₉₈ N ₅₈ O ₅₇ S
Molecular Weight:	4398.87
Sequence:	Ala-Pro-Leu-Glu-Pro-Met-Tyr-Pro-Gly-Asp-Tyr-Ala-Thr-His-Glu-Gln-Arg-Ala-Gln-Tyr-Glu-Thr-Gln-Leu-Arg-Arg-Tyr-Ile-Asn-Thr-Leu-Thr-Arg-Pro-Arg-Tyr-NH ₂
Sequence Shortening:	APLEMYPG DYATHEQRAQYETQLRRYINTLTPRY-NH ₂
Target:	Neuropeptide Y Receptor
Pathway:	GPCR/G Protein; Neuronal Signaling
Storage:	Please store the product under the recommended conditions in the Certificate of Analysis.

BIOLOGICAL ACTIVITY

Description	Pancreatic Polypeptide, rat is an agonist of NPY receptor, with high affinity at NPYR4.
IC ₅₀ & Target	NPYR4 ^[1]
In Vitro	Pancreatic Polypeptide, rat is an agonist of NPY receptor, with high affinity at NPYR4. Pancreatic Polypeptide (1 μM) does not alter proliferation in BRIN BD11 or 1.1B4 beta-cells, but reverses the decreased cell viability in BRIN BD11 cells induced by streptozotocin. Pancreatic Polypeptide (0.1 nM-1 μM) shows no effect on insulin secretion from isolated mouse islets, and does not affect the membrane potential and (Ca ²⁺) _i levels in BRIN BD11 cells at 1 μM ^[1] . MCE has not independently confirmed the accuracy of these methods. They are for reference only.
In Vivo	Pancreatic Polypeptide (25 nmol/kg bw, i.p.) reduces glucose-stimulated insulin concentrations but shows no effect on acute feeding behaviour in overnight fasted mice ^[1] . MCE has not independently confirmed the accuracy of these methods. They are for reference only.

PROTOCOL

Cell Assay ^[1]	To assess the effects of NPY and Pancreatic Polypeptide on rodent BRIN-BD11 and human 1.1B4 beta-cell proliferation, cells are seeded at a density of 150,000 cells per well and cultured overnight in the presence of NPY or Pancreatic Polypeptide (1 μM), and compared to positive control GLP-1 (1 μM). Cells are washed with PBS and fixed using 4% paraformaldehyde. After antigen retrieval with citrate buffer at 95°C for 20 min, tissue is blocked using 2% BSA for 45 min. The slides are then incubated with rabbit anti-Ki-67 primary antibody, and subsequently with Alexa Fluor® 594 secondary antibody. Slides are viewed using fluorescent microscope and photographed by DP70 camera adapter system. Proliferation frequency is determined in a blinded fashion and expressed as % of total cells analysed. Approximately 150 cells per replicate are analysed. For analysis of ability of NPY and Pancreatic Polypeptide to protect against streptozotocin-induced DNA damage, BRIN-BD11 and 1.1B4 cells are seeded. Cells are then exposed to streptozotocin (5 mM) in the presence or absence of NPY or Pancreatic Polypeptide (1 μM) for 2 h, with GLP-1 (1 μM) as positive control. Cells are then harvested and a comet assay is performed. Resulting gels are stained using DAPI (4',6-diamidino-2-phenylindole) (100 μg/mL) and slides are viewed under appropriate filter. Comet score software is used for the analysis of % tail DNA (100 cells per gel) and olive tail moment ^[1] .
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**Animal
Administration [1]**

Mice^[1]

Plasma glucose and insulin responses are evaluated after intraperitoneal (i.p.) injection of glucose alone (18 mmol/kg body weight) or in combination with test peptides (Pancreatic Polypeptide, etc.; 25 nmol/kg body weight) in overnight (18 h) fasted C57BL/6 mice. In a second series of experiments, 18 h fasted mice are used to assess the effects of respective test peptides on food intake. Mice receive an i.p. injection of saline alone (0.9% (w/v) NaCl) or in combination with test peptides (25 nmol/kg body weight) and food intake measured at 30 min intervals for 180 min. A dose of 25 nmol/kg is chosen with other NPYR modulators on glucose homeostasis, insulin secretion and feeding at this dose^[1].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

REFERENCES

- [1]. Khan D, et al. Influence of neuropeptide Y and pancreatic polypeptide on islet function and beta-cell survival. *Biochim Biophys Acta*. 2017 Apr;1861(4):749-758.

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

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