PACAP (1-27), human, ovine, rat

Cat. No.:	HY-P0176
CAS No.:	127317-03-7
Molecular Formula:	$C_{142}H_{224}N_{40}O_{39}S$
Molecular Weight:	3147.66
Sequence:	His-Ser-Asp-Gly-Ile-Phe-Thr-Asp-Ser-Tyr-Ser-Arg-Tyr-Arg-Lys-Gln-Met-Ala-Val-Lys-Lys-Tyr-Leu-Ala-Ala-Val-Leu-NH2
Sequence Shortening:	HSDGIFTDSYSRYRKQMAVKKYLAAVL-NH2
Target:	PACAP Receptor
Pathway:	GPCR/G Protein
Storage:	Please store the product under the recommended conditions in the Certificate of Analysis.

BIOLOGICAL ACTIVITY

Description	PACAP (1-27), human, ovine, rat (PACAP 1-27) is the N-terminal fragment of PACAP-38, and is a potent PACAP receptor antagonist with IC_{50}s of 3 nM, 2 nM and 5 nM for rat PAC1, rat VPAC1 and human VPAC2, respectively[1].
IC_{50} & Target	IC50: 3 nM (rat PAC1), 2 nM (rat VPAC1), 5 nM (human VPAC2)[1]
In Vitro	Radioligand receptor binding assays with I-monoiodinated PACAP (1-27), human, ovine, rat confirms the presence of PAC - receptors on AR4-2J cells, since PACAP (1-27), human, ovine, rat and PACAP(1–38) equipotently displaces radioligand binding with a K_d of 1-2 nM, whereas vasoactive intestinal peptide (VIP) is 1000-fold less potent. PACAP (1-27), human, ovine, rat exhibits a distinct and much higher susceptibility to VIP-amino acid substitutions. PACAP (1-27), human, ovine, rat has potency and binding affinity to stimulate IP3 and cAMP formation in AR4-2J cells[2]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
In Vivo	The inhibitory effect of pituitary adenylate cyclase activating polypeptide (PACAP (1-27), human, ovine, rat) on the increase in total pulmonary resistance (RL) causes either by allergen or histamine in anaesthetized, ventilated guinea-pigs is studied. PACAP (1-27), human, ovine, rat given via i.v. infusion (0.045-4.5 nmol/kg/min) dose-dependently reduces the increase in RL caused by inhaled ovalbumin and histamine. At the highest dose, PACAP (1-27), human, ovine, rat prevented the increase in RL caused by ovalbumin and histamine completely. Infusion of PACAP (1-27), human, ovine, rat and the β2-adrenoceptor agonist, salbutamol (0.045-4.5 nmol/kg/min) inhibit the increase in RL similarly, but salbutamol increases the heart rate more than PACAP (1-27), human, ovine, rat[3]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

PROTOCOL

Animal Administration [3][4]	Guinea-pigs[3] PACAP-27 (0.045 to 4.5 nmol/kg/min), salbutamol (0.045 to 4.5 nmol/kg/min) or sterile saline is given i.v. (1.0 mL) via an infusion pump, starting 5 min before and continuing 10 min after airway challenge[3].

Dogs[4]

Four dogs (28.4±1.8 kg) receive PACAP (1-27) with four different concentrations of 0.01, 0.1, 1.0 and 10 μg/mL, or 0.00318, 0.0318, 0.318 and 3.18 μM, respectively. Each solution is locally infused at a rate of 0.5 mL/min for precisely 1 min. A total dose delivered to the pancreas during each infusion is therefore 0.005, 0.05, 0.5 and 5 μg. The dead volume of the pancreatic arterial catheter (0.5 mL) is taken into account in relation to the infusion rate. After taking the initial control sample, simultaneously from the SPD vein and the aorta, saline is infused for 1 min and samples are obtained 1, 3 and 5 min after the onset of infusion. This procedure is repeated every 15 min for the doses of PACAP (1-27). The sample obtained at 15 min after the onset of each infusion served as control for the subsequent intervention[4].

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

CUSTOMER VALIDATION

- Cell Metab. 2022 Nov 11;S1550-4131(22)00490-9.

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REFERENCES

[1]. Gourlet P, et al. Fragments of pituitary adenylate cyclase activating polypeptide discriminate between type I and II recombinant receptors. Eur J Pharmacol. 1995 Dec 4;287(1):7-11.

[2]. Schäfer H, et al. Structural motifs of pituitary adenylate cyclase-activating polypeptide (PACAP) defining PAC1-receptor selectivity. Regul Pept. 1999 Feb 5;79(2-3):83-92.

[3]. Lindén A, et al. Inhibition of bronchoconstriction by pituitary adenylate cyclase activating polypeptide (PACAP 1-27) in guinea-pigs in vivo. Br J Pharmacol. 1995 Jul;115(6):913-6.

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