ACTH (1-17) (TFA)

Cat. No.: HY-P1545A

Molecular Formula: $C_{95}H_{145}N_{29}O_{23}S.C_2HF_3O_2$

Molecular Weight: 2207.43

Sequence: Ser-Tyr-Ser-Met-Glu-His-Phe-Arg-Trp-Gly-Lys-Pro-Val-Gly-Lys-Lys-Arg

Sequence Shortening: SYSMEHFRWGKPVGKKR

SYSMEHFRWGKPVGKKR (TFA salt)

Target: Melanocortin Receptor

Pathway: GPCR/G Protein; Neuronal Signaling

Storage: Sealed storage, away from moisture and light

Powder -80°C 2 years

-20°C 1 year

* In solvent : -80°C, 6 months; -20°C, 1 month (sealed storage, away from moisture and light)

SOLVENT & SOLUBILITY

In Vitro

H_2O : 100 mg/mL (45.30 mM; Need ultrasonic)

Preparing Stock Solutions	Solvent / Mass / Concentration	1 mg	5 mg	10 mg
	1 mM	0.4530 mL	2.2651 mL	4.5302 mL
	5 mM	0.0906 mL	0.4530 mL	0.9060 mL
	10 mM	0.0453 mL	0.2265 mL	0.4530 mL

Please refer to the solubility information to select the appropriate solvent.

In Vivo

1. Add each solvent one by one: PBS
   Solubility: 100 mg/mL (45.30 mM); Clear solution; Need ultrasonic

BIOLOGICAL ACTIVITY

Description

ACTH (1-17) TFA, an adrenocorticotropin analogue, is a potent human melanocortin 1 (MC1) receptor agonist with a K_i of 0.21 nM.

IC_{50} & Target

MC1R

In Vitro

ACTH (1-17) TFA is a potent agonist at the hMC1R. ACTH (1-17) shows high affinity for the hMC1R with a K_i value of 0.21±0.03 nM which is slightly higher than that of 0.13±0.005 nM for alpha-MSH[1]. ACTH (1-17) induces a slight and not significant increase in growth hormone secretion even when micromolar concentrations of the peptide are employed in rat pituitary cultures[2].

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

In Vivo	Inhibition of DNA labeling is noted when the ACTH (1-17) is administered at 2 hr after the beginning of the daily dark span when nocturnal animals become active. When administered at this circadian stage, the larger dose in particular is associated with an inhibition of DNA labeling lasting for 24 hr. The inhibitory effect is much shorter when the same dose is injected 4 hr earlier[3]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

PROTOCOL

Cell Assay [1]	Rat pituitary cells are incubated in the presence of varying concentrations of ACTH (1-17) (0.1 nM-1 μM). A significant increase of growth hormone secretion is documented with each concentration[1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
Animal Administration [3]	Mice[3] The effects of ACTH (1-17) on the rate of DNA labeling in the metaphyseal bone of CD2F1 mice are tested on a chronopharmacological dosing schedule. Groups of mice that has been conditioned to a 12-hr light/12-hr dark schedule are injected at one of six different timepoints, 4 hr apart during ,a single 24-hr span with either a low (0.021 I.U/kg) or a high (20 I.U./kg) dose of ACTH (1-17). Control groups receive injections of a placebo at corresponding timepoints. Subgroups of mice are injected with [^{3}H]thymidine ([^{3}H]Tdr) to follow the changes in DNA labeling in the proximal tibial metaphysis at 15 min and 2, 4, 8, 12 and 24 hr after ACTH (1-17) or placebo treatment[3]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

REFERENCES

[1]. Tsatmali M et al. ACTH1-17 is a more potent agonist at the human MC1 receptor than alpha-MSH. Cell Mol Biol (Noisy-le-grand). 1999 Nov;45(7):1029-34.

[2]. Ceda GP, et al. The effects of ACTH (1-17) on GH secretion in vitro. Horm Metab Res. 1987 Aug;19(8):361-3.

[3]. Walker WV, et al. Effect of an adrenocorticotropin analogue, ACTH (1-17), on DNA synthesis in murine metaphyseal bone. Biochem Pharmacol. 1985 Apr 15;34(8):1191-6.

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