

## ACTH (1-17)

<b>Cat. No.:</b>	HY-P1545
<b>CAS No.:</b>	7266-47-9
<b>Molecular Formula:</b>	C <sub>95</sub> H <sub>145</sub> N <sub>29</sub> O <sub>23</sub> S
<b>Molecular Weight:</b>	2093.41
<b>Sequence:</b>	Ser-Tyr-Ser-Met-Glu-His-Phe-Arg-Trp-Gly-Lys-Pro-Val-Gly-Lys-Lys-Arg
<b>Sequence Shortening:</b>	SYSMEHFRWGKPVGKKR
<b>Target:</b>	Melanocortin Receptor
<b>Pathway:</b>	GPCR/G Protein; Neuronal Signaling
<b>Storage:</b>	Please store the product under the recommended conditions in the Certificate of Analysis.

### BIOLOGICAL ACTIVITY

<b>Description</b>	ACTH (1-17), an adrenocorticotropin analogue, is a potent human melanocortin 1 (MC1) receptor agonist with a K <sub>i</sub> of 0.21 nM.
<b>IC<sub>50</sub> &amp; Target</b>	Ki: 0.21 nM (human MC1 receptor) <sup>[1]</sup>
<b>In Vitro</b>	ACTH (1-17) is a potent agonist at the hMC1R. ACTH (1-17) shows high affinity for the hMC1R with a K <sub>i</sub> value of 0.21±0.03 nM which is slightly higher than that of 0.13±0.005 nM for alpha-MSH <sup>[1]</sup> . 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 <sup>[2]</sup> . MCE has not independently confirmed the accuracy of these methods. They are for reference only.
<b>In Vivo</b>	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 <sup>[3]</sup> . MCE has not independently confirmed the accuracy of these methods. They are for reference only.

### PROTOCOL

<b>Cell Assay</b> <sup>[1]</sup>	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 <sup>[1]</sup> . MCE has not independently confirmed the accuracy of these methods. They are for reference only.
<b>Animal Administration</b> <sup>[3]</sup>	Mice <sup>[3]</sup> 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

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are injected with [<sup>3</sup>H]thymidine ([<sup>3</sup>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<sup>[3]</sup>.

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

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

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