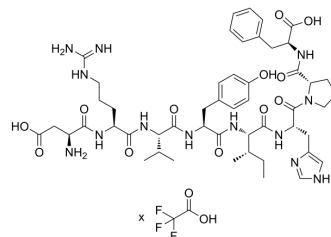


Angiotensin II human TFA

Cat. No.:	HY-13948B
CAS No.:	2761969-44-0
Molecular Formula:	C ₅₂ H ₇₂ F ₃ N ₁₃ O ₁₄
Molecular Weight:	1160.2
Sequence Shortening:	DRVYIHPF
Target:	Angiotensin Receptor; Apoptosis
Pathway:	GPCR/G Protein; Apoptosis
Storage:	Sealed storage, away from moisture and light, under nitrogen
	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, under nitrogen)

SOLVENT & SOLUBILITY

In Vitro

H₂O : 10 mg/mL (8.62 mM; Need ultrasonic)

Preparing Stock Solutions	Solvent Concentration	Mass	1 mg	5 mg	10 mg
	1 mM		0.8619 mL	4.3096 mL	8.6192 mL
	5 mM		0.1724 mL	0.8619 mL	1.7238 mL
	10 mM		---	---	---

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

BIOLOGICAL ACTIVITY

Description

Angiotensin II human (Angiotensin II) TFA is a vasoconstrictor and a major bioactive peptide of the renin/angiotensin system. Angiotensin II human TFA plays a central role in regulating human blood pressure, which is mainly mediated by interactions between Angiotensin II and the G-protein-coupled receptors (GPCRs) Angiotensin II type 1 receptor (AT1R) and Angiotensin II type 2 receptor (AT2R). Angiotensin II human TFA stimulates sympathetic nervous stimulation, increases aldosterone biosynthesis and renal actions. Angiotensin II human TFA induces growth of vascular smooth muscle cells, increases collagen type I and III synthesis in fibroblasts, leading to thickening of the vascular wall and myocardium, and fibrosis. Angiotensin II human TFA also induces apoptosis. Angiotensin II human TFA induces capillary formation from endothelial cells via the LOX-1 dependent redox-sensitive pathway^{[1][2][3][4]}.

IC₅₀ & Target

AT2 Receptor

AT1 Receptor

In Vitro

Most of the known actions of Angiotensin II (Ang II) human are mediated by AT1 receptors, the AT2 receptor contributes to the regulation of blood pressure and renal function^[1].

?Angiotensin II human raises blood pressure (BP) by a number of actions, the most important ones being vasoconstriction, sympathetic nervous stimulation, increased aldosterone biosynthesis and renal actions. Other Angiotensin II human actions include induction of growth, cell migration, and mitosis of vascular smooth muscle cells, increased synthesis of collagen type I and III in fibroblasts, leading to thickening of the vascular wall and myocardium, and fibrosis. These actions are mediated by type 1 Ang II receptors (AT₁)^[2].

?Angiotensin II (1 nM) TFA induces the expression of LOX-1 and VEGF and enhances capillary formation from human coronary endothelial cells in Matrigel assay. Angiotensin II-mediated expression of LOX-1 and VEGF, capillary formation, intracellular reactive oxygen species generation, and phosphorylation of p38 as well as p44/42 mitogen-activated protein kinases, are suppressed by anti-LOX-1 antibody, nicotinamide-adenine dinucleotide phosphate oxidase inhibitor apocynin and the Ang II type 1 receptor blocker Losartan, but not by the Ang II type 2 receptor blocker PD123319^[3].

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

In Vivo

Angiotensin II human (5 mL of 1 nM; intraperitoneal injection; 200-250 g Sprague-Dawley rats) TFA induces a significant neutrophil recruitment that was maximal at 4 hours and had resolved by 24 hours^[4].

To distinguish the AT₁ receptor population that is critical for the pathogenesis of hypertension, osmotic minipumps are implanted s.c. into each animal to infuse Angiotensin II human (1000 ng/kg/min) acetate continuously for 4 weeks. Angiotensin II human acetate causes hypertension by activating AT₁ receptors in the kidney promoting sodium reabsorption^[5].

1. Induction of hypertension^[7]

Background

Specific Modeling Methods

Mice: C57/BL6J • male and female • 12-16 wk old • 21-27 g

Administration: 800 ng/kg/min, 0.003 mL/min • 7 days • sc, osmotic pump implanted subcutaneously

Note

Effect of gender: Chronic ANG II-induced hypertension differs by gender in awake mice. Female mice may be protected from the ANG II-induced increase in blood pressure.

Modeling Indicators

Key Factor: Blood pressure ↑ on day 7, blood pressure in male was greater than in female.

Opposite Product(s):

2. Induction of Cardiac Hypertrophy^{[8][9]}

Background

Specific Modeling Methods

Mice: C57/BL6J • male • 8 wk old & bull

Administration: 2 µg/kg/min • 4 weeks • sc, osmotic pump implanted subcutaneously

Modeling Indicators

Indicator changes: Blood pressure in WT mice increased significantly.

Appearance monitoring: cardiac hypertrophy and fibrosis.

Opposite Product(s): Eplerenone (HY-B0251)

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

CUSTOMER VALIDATION

- Cell Host Microbe. 2022 Oct 12;30(10):1450-1463.e8.
- Circ Res. 2020 Mar 13;126(6):e15-e29.

- ACS Nano. 2022 Aug 23;16(8):12553-12568.
- Sci Transl Med. 2021 Jul 21;13(603):eaaz4959.
- Nat Aging. 2024 Mar;4(3):396-413.

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- [1]. de Gasparo M, et al. International union of pharmacology. XXIII. The angiotensin II receptors. Pharmacol Rev. 2000 Sep;52(3):415-72.
- [2]. Fyhrquist F, et al. Role of angiotensin II in blood pressure regulation and in the pathophysiology of cardiovascular disorders. J Hum Hypertens. 1995 Nov;9 Suppl 5:S19-24.
- [3]. Hu C, et al. Angiotensin II induces capillary formation from endothelial cells via the LOX-1 dependent redox-sensitive pathway. Hypertension. 2007;50(5):952-957.
- [4]. Nabah YN, et al. Angiotensin II induces neutrophil accumulation in vivo through generation and release of CXC chemokines. Circulation. 2004;110(23):3581-3586.
- [5]. Crowley SD, et al. Angiotensin II causes hypertension and cardiac hypertrophy through its receptors in the kidney. Proc Natl Acad Sci U S A. 2006 Nov 21;103(47):17985-90.
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Caution: Product has not been fully validated for medical applications. For research use only.

Tel: 609-228-6898

Fax: 609-228-5909

E-mail: tech@MedChemExpress.com

Address: 1 Deer Park Dr, Suite Q, Monmouth Junction, NJ 08852, USA