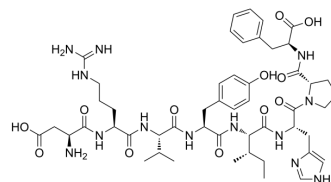


## Angiotensin II human

<b>Cat. No.:</b>	HY-13948
<b>CAS No.:</b>	4474-91-3
<b>Molecular Formula:</b>	C <sub>50</sub> H <sub>71</sub> N <sub>13</sub> O <sub>12</sub>
<b>Molecular Weight:</b>	1046.18
<b>Sequence:</b>	Asp-Arg-Val-Tyr-Ile-His-Pro-Phe
<b>Sequence Shortening:</b>	DRVYIHPF
<b>Target:</b>	Angiotensin Receptor; Apoptosis
<b>Pathway:</b>	GPCR/G Protein; Apoptosis
<b>Storage:</b>	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

DMSO : 100 mg/mL (95.59 mM; Need ultrasonic)  
 H<sub>2</sub>O : 50 mg/mL (47.79 mM; Need ultrasonic)

	Solvent Concentration	Mass		
		1 mg	5 mg	10 mg
Preparing Stock Solutions	1 mM	0.9559 mL	4.7793 mL	9.5586 mL
	5 mM	0.1912 mL	0.9559 mL	1.9117 mL
	10 mM	0.0956 mL	0.4779 mL	0.9559 mL

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

#### In Vivo

- Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline  
Solubility: ≥ 2.5 mg/mL (2.39 mM); Clear solution
- Add each solvent one by one: 10% DMSO >> 90% corn oil  
Solubility: ≥ 2.5 mg/mL (2.39 mM); Clear solution
- Add each solvent one by one: PBS  
Solubility: 2 mg/mL (1.91 mM); Clear solution; Need ultrasonic and warming and heat to 60°C
- Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)  
Solubility: ≥ 0.83 mg/mL (0.79 mM); Clear solution

### BIOLOGICAL ACTIVITY

#### Description

Angiotensin II (Angiotensin II) is a vasoconstrictor and a major bioactive peptide of the renin/angiotensin system.

	<p>Angiotensin II human 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 stimulates sympathetic nervous stimulation, increases aldosterone biosynthesis and renal actions. Angiotensin II human 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 also induces apoptosis. Angiotensin II induces capillary formation from endothelial cells via the LOX-1 dependent redox-sensitive pathway<sup>[1][2][3][4]</sup>.</p>	
IC <sub>50</sub> & Target	AT1 Receptor	AT2 Receptor
In Vitro	<p>Most of the known actions of Angiotensin II (Ang II) are mediated by AT1 receptors, the AT2 receptor contributes to the regulation of blood pressure and renal function<sup>[1]</sup>.</p> <p>. Angiotensin II 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 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 (AT<sub>1</sub>)<sup>[2]</sup>.</p> <p>Angiotensin II (1 nM) 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<sup>[3]</sup>.</p> <p>MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p>	
In Vivo	<p>Angiotensin II human can be used in animal modeling to construct cardiovascular and cerebrovascular disease models.</p> <p>Angiotensin II human (5 mL of 1 nM; intraperitoneal injection; 200-250 g Sprague-Dawley rats) induces a significant neutrophil recruitment that was maximal at 4 hours and had resolved by 24 hours<sup>[4]</sup>.</p> <p>To distinguish the AT<sub>1</sub> receptor population that is critical for the pathogenesis of hypertension, osmotic minipumps are implanted s.c. into each animal to infuse Angiotensin II (1000 ng/kg/min) continuously for 4 weeks. Angiotensin II causes hypertension by activating AT<sub>1</sub> receptors in the kidney promoting sodium reabsorption<sup>[5]</sup>.</p> <p>MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p>	

## PROTOCOL

### Animal Administration <sup>[3]</sup>

Mice<sup>[3]</sup>  
 (129×C57BL/6) F<sub>1</sub> mice lacking AT<sub>1A</sub> receptors for Angiotensin II are used. The mice are fed 10 gm/day gelled 0.25% NaCl diet that contains all nutrients and water. After 1 week of baseline collections, the animals are implanted with osmotic minipumps infusing Angiotensin II and are returned to the metabolic cage for 5 more days. Urinary sodium content is determined by using an IL943 Automatic Flame photometer. After 28 days of Angiotensin II infusion, hearts are harvested, weighed, fixed in formalin, sectioned, and stained with Masson trichrome. All of the tissues are examined by a pathologist (P.R.) without knowledge of genotypes.

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 Commun. 2022 Jul 25;13(1):4278.

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## REFERENCES

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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]. 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.
- [4]. 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.
- [5]. Nabah YN, et al. Angiotensin II induces neutrophil accumulation in vivo through generation and release of CXC chemokines. Circulation. 2004;110(23):3581-3586.
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