

Product Data Sheet

Product Name: Angiotensin I (human, mouse, rat)

Cat. No.: GP10087

Chemical Properties

Cas. No. 484-42-4

Chemical Name Angiotensin I (human, mouse, rat)

SMILES CCC(C)C(C(=O)NC(CC1=CN=CN1)C(=O)N2CCCC2C(=O)NC(CC3=CC=CC=C3)C(=O)NC(CC4=CN=CN4)C(=O)NC(CC(C)C)C(=O)O)NC(=O)C(CC5=CC=C(C=C5)O)NC(=O)C(C(C)C)NC(=O)C(CCCN=C(N)N)NC(=O)C(CC(=O)O)N

Formula C₆₂H₈₉N₁₇O₁₄ M.Wt 1296.5

Solubility ≥129.6mg/mL in DMSO, ≥124.2 mg/mL in Water Storage Desiccate at -20°C

General tips For obtaining a higher solubility , please warm the tube at 37 °C and shake it in the ultrasonic bath for a while. Stock solution can be stored below -20°C for several months.

Shipping Condition Evaluation sample solution : ship with blue ice All other available size: ship with RT , or blue ice upon request.

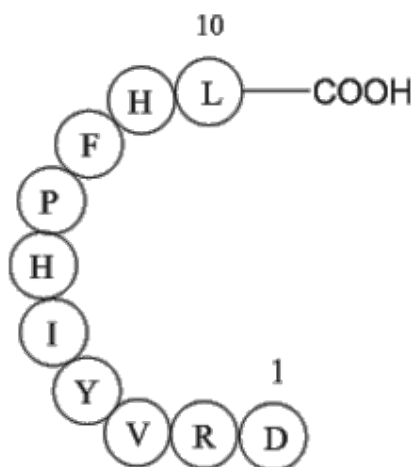
Caution: Product has not been fully validated for medical applications. For research use only.

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Structure



Protocol

Cell experiment [1]:

Cell lines HEK-ACE2 cells

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The recipient cells (HEK-ACE2) were seeded in density 4×10^4 cells per well of 96-well plate and cultured overnight in normal growth medium (DMEM, pH=7.6) supplemented with 10% FBS. Next day, the cells were pre-incubated with 500μM Angiotensin I for 2h then SARS-CoV-2 Spike pseudovirus (in 50μl of cultivation medium) was added to the cells. The cells were lysed with 70μl of cell lysis buffer 48h post-infection and 30μl of lysate was used to determine the luciferase activity.

Reaction Conditions 500μM; 2h pre-incubation followed by 48h co-infection

Applications Angiotensin I significantly reduced the viability of human ACE2-overexpressing HEK-ACE2 cells infected with SARS-CoV-2 spike-pseudotyped virus.

Animal experiment [2]:

Animal models Male low density lipoprotein receptor (Ldlr)-/- mice

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Male low density lipoprotein receptor (Ldlr)^{-/-} mice were fed a standard rodent diet and provided with water purified by reverse osmosis (pH 6.0-6.2). Hypercholesterolemia was induced by feeding a diet supplemented with saturated fat. When mice were 8–16 weeks old, saline, Angiotensin I (1,000ng/kg/min) was infused subcutaneously using osmotic pump (Alzet model 1004 for 4 weeks). Aortas were dissected from the ascending region to iliac bifurcation and placed in 10% (wt/vol) neutrally buffered formalin overnight. After removal of adventitia, aortas were pinned and photographed. To quantify abdominal aortic dilation, maximal ex vivo diameters of suprarenal aortas were measured using ImagePro Plus software. Subsequently, aortas were cut open longitudinally, secured with pins, and imaged. To determine formation of thoracic aortic aneurysms, the intimal area of the ascending aorta was measured.

Preparation Method

Dosage form 1000ng/kg/min; 4 weeks; s.c. osmotic minipump

Applications Angiotensin I induced both thoracic and abdominal aortic aneurysms in Ldlr^{-/-} mice, and increased ascending aortic intima area by 2.4-fold and suprarenal abdominal aortic diameter by 1.9-fold.

References:

- [1] Zorad S, Skrabanova M, Zilkova M, et al. Angiotensin I and II Stimulate Cell Invasion of SARS-CoV-2: Potential Mechanism via Inhibition of ACE2 Arm of RAS. *Physiol Res.* 2024;73(1):27-35.
- [2] Sawada H, Kukida M, Chen X, et al. Angiotensin I Infusion Reveals Differential Effects of Angiotensin-Converting Enzyme in Aortic Resident Cells on Aneurysm Formation. *Circ J.* 2020;84(5):825-829.

Background

Angiotensin I (human, mouse, rat), a decapeptide hormone, is the precursor of Angiotensin II [1].

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Angiotensin I is specifically cleaved to Angiotensin II by the angiotensin-converting enzyme (ACE) in vivo^[2]. Angiotensin II activates AT1 and AT2 receptors, raises blood pressure, and stimulates aldosterone release^[3]. As a standard tool peptide in renin-angiotensin system (RAS) research, Angiotensin I is widely used in cardiovascular studies of hypertension, heart failure, and kidney disease^[4].

In vitro, Treatment of murine peritoneal cells with Angiotensin I (10ng/μl ; 10 min–6h) results in cooperative conversion to Angiotensin II by mast-cell chymase mMCP-4 and carboxypeptidase A, peaking at 10–30min and degrading by 3h, concomitantly yielding Ang-(1–9), Ang-(5–10) and Ang-(1–7)^[5]. Angiotensin I (500μM; 2h pre-incubation followed by 48h co-infection) significantly increases the invasion efficiency of SARS-CoV-2 spike-pseudotyped virus (PVP) into human ACE2-overexpressing HEK-ACE2 cells independently of the Angiotensin II AT1 receptor^[6].

In vivo, Angiotensin I (1000ng/kg/min; 4 weeks; s.c. osmotic minipump) induced both thoracic and abdominal aortic aneurysms in Ldlr^{-/-} mice, and increased ascending aortic intima area by 2.4-fold and suprarenal abdominal aortic diameter by 1.9-fold^[7]. Angiotensin I (0.2μg/g BW; single i.p.; 5min) increased systolic blood pressure by 28 ± 4mmHg in male C57BL/6J mice^[8].

References:

- [1] Manabe K, Shirahase H, Usui H, Kurahashi K, Fujiwara M. Endothelium-dependent contractions induced by angiotensin I and angiotensin II in canine cerebral artery. *J Pharmacol Exp Ther*. 1989;251(1):317-320.
- [2] Fuchs S, Xiao HD, Hubert C, et al. Angiotensin-converting enzyme C-terminal catalytic domain is the main site of angiotensin I cleavage in vivo. *Hypertension*. 2008;51(2):267-274.
- [3] Mulrow PJ. Angiotensin II and aldosterone regulation. *Regul Pept*. 1999;80(1-2):27-32.
- [4] Lazartigues E, Llorens-Cortes C, Danser AHJ. New Approaches Targeting the Renin-Angiotensin System: Inhibition of Brain Aminopeptidase A, ACE2 Ubiquitination, and Angiotensinogen. *Can J Cardiol*. 2023;39(12):1900-1912.
- [5] Lundequist A, Tchougounova E, Abrink M, Pejler G. Cooperation between mast cell carboxypeptidase A and the chymase mouse mast cell protease 4 in the formation and degradation of angiotensin II. *J Biol Chem*. 2004;279(31):32339-32344.
- [6] Zorad S, Skrabanova M, Zilkova M, et al. Angiotensin I and II Stimulate Cell Invasion of SARS-

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[7] Sawada H, Kukida M, Chen X, et al. Angiotensin I Infusion Reveals Differential Effects of Angiotensin-Converting Enzyme in Aortic Resident Cells on Aneurysm Formation. *Circ J.* 2020;84(5):825-829.

[8] Forster P, Wysocki J, Abedini Y, et al. Aminopeptidase A Effect on Angiotensin Peptides and Their Blood Pressure Action. *Int J Mol Sci.* 2025;26(14):6990.

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