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产品名称：Angiotensin 1-7
产品别名：Ang-(1-7)

生物活性：

Description	Angiotensin 1-7 (Ang-(1-7)) is a major active component of the renin-angiotensin system (RAS), produced from cleavage of Ang II by angiotensin-converting-enzyme type 2 (ACE2). Angiotensin 1-7 inhibits purified canine ACE activity (IC50=0.65 μM). Angiotensin 1-7 acts as a local synergistic modulator of kinin-induced vasodilation by inhibiting ACE and releasing nitric oxide. Angiotensin 1-7 blocks Ang II-induced smooth muscle cell proliferation and hypertrophy and shows antiangiogenic and growth-inhibitory effects on the endothelium. Angiotensin 1-7 shows anti-inflammatory activity [1][2][3].
IC_{50} & Target	IC50: 0.65 μM (ACE)[2]
In Vitro	Angiotensin 1-7 (Ang-(1-7)) inhibits cultured vascular smooth muscle cell growth, whereas equal molar concentration of Ang II stimulates cell growth[2]. Angiotensin 1-7 (Ang 1-7) abrogates the methylglyoxal-modified albumin (MGA)-stimulated myofibroblast phenotype by inhibiting the chronic stimulation of the TGF-β-ERK pathway in NRK-52E cells[4].
In Vivo	Daily Angiotensin 1-7 (Ang-(1-7)) treatment (0.01-0.06 mg/kg) results in significant amelioration of DSS-induced colitis. Colitis-associated phosphorylation of p38, ERK1/2 and Akt is reduced by Ang 1-7 treatment[3].
Solvent&Solubility	***In Vitro:*** **H_2O : ≥ 30.2 mg/mL (33.59 mM)** * "≥" means soluble, but saturation unknown.

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	1.1123 mL	5.5617 mL	11.1235 mL
5 mM	0.2225 mL	1.1123 mL	2.2247 mL
10 mM	0.1112 mL	0.5562 mL	1.1123 mL

*请根据产品在不同溶剂中的溶解度选择合适的溶剂配制储备液；一旦配成溶液，请分装保存，避免反复冻融造成的产品失效。

储备液的保存方式和期限：-80°C, 6 months; -20°C, 1 month。-80°C 储存时，请在 6 个月内使用，-20°C 储存时，请在 1 个月内使用。

References

[1]. Vaz-Silva J, et al. The vasoactive peptide angiotensin-(1-7), its receptor Mas and the angiotensin-converting enzyme type 2 are expressed in the human endometrium. Reprod Sci. 2009 Mar;16(3):247-56.

[2]. Li P, et al. Angiotensin-(1-7) augments bradykinin-induced vasodilation by competing with ACE and releasing nitric oxide. Hypertension. 1997 Jan;29(1 Pt 2):394-400.

[3]. Khajah MA, et al. Anti-Inflammatory Action of Angiotensin 1-7 in Experimental Colitis. PLoS One. 2016 Mar 10;11(3):e0150861.

[4]. Alzayadneh EM, et al. Angiotensin-(1-7) abolishes AGE-induced cellular hypertrophy and myofibroblast transformation via inhibition of ERK1/2. Cell Signal. 2014 Sep 19. pii: S0898-6568(14)00314-3.

实验参考：

Cell Assay	500 μM Methylglyoxal is incubated with 100 μM BSA dissolved in phosphate buffered saline (PBS) for 24 hours, then washed on 10 kDa filters to remove excess methyl glyoxal, reconstituted with DMEM/F12 serum free media and passed through a 0.2 μmicron filter. TGF-β (5 ng/mL) is prepared to treat cells in a subset of experiments. Cells are co-treated with one or combinations of the following: Angiotensin (1-7) (100 nM), D-Ala7-Ang-(1-7) (10 μM), ERK1/2 kinase inhibitor, PD 98059 (1 μM), TGF-β receptor kinase inhibitor; SB525334 (1 μM), the AT_1 receptor antagonist Losartan (1 μM), the renin inhibitor Aliskerin (1 μM) and the ACE inhibitor Lisinopril (1 μM)[2].
Animal Administration	Mice[3] Male and female BALB/c mice (1:1 ratio, 6-10 weeks old, mean weight 20 g.) are used. Angiotensin fragment 1-7 acetate salt hydrate (Ang 1-7) is dissolved in 0.9% saline (vehicle) at 1 mg/mL and stored at -80°C. Various doses (0.01, 0.06, 0.1, 0.3 and 1 mg/kg) are freshly prepared from the stock each day of the experiment, and administered to mice by daily intra-peritoneal (i.p) injections in a volume of 500 μL per injection, either before (prophylactic approach) or after (treatment approach) DSS treatment. A779 (MAS-1 R antagonist) is similarly dissolved in distilled water at 1 mg/mL and stored at -80°C. A freshly prepared dose of 1 mg/kg is administered to a second group of mice by daily i.p injections in a volume of 500 μL daily (for 4 days) along with colitis induction (prophylactic approach). A third group of mice receive DSS containing water and daily i.p injections of 0.9% saline (vehicle). The fourth group receive DSS containing water along with daily i.p injections with Dexamethasone (DEX) at doses of 0.01-1.0 mg/kg or its vehicle (0.9% saline) (prophylactic approach). Rats[4] Twenty six ovariectomized female Wistar rats weighing 200±20 g are used. Angiotensin (1-7) is administered intravenously by a microsyringe pump at two different continuous doses of 100 and 300 ng/kg/min after antagonist/saline infusion. Each dose is infused for 15 min; and MAP, RPP, and RBF are recorded during Angiotensin (1-7) infusion and the last 3-5 min of each dose measured as “response to Angiotensin (1-7) infusion”. During Angiotensin (1-7) infusion, RPP is sustained at pre-Ang1-7 infusion levels via an adjustable aortic clamp.
Kinase Assay	Competition assays using purified canine ACE are determined using a fixed concentration of the substrate Hip-His-Leu (1 mM) and varying the concentrations of the competing agents [Lisinopril (0.1 to 100 nM), Angiotensin (1-7) (10 nM to 10 μM), or Sar^1, Thr^8-Ang II (10 nM to 10 μM)]. Inhibitory constants (IC_{50}) are determined from the respective competition curves. To study the effect of Angiotensin (1-7) on BK metabolism in intact coronary rings, ^{125}I-[Tyr^0]-BK (final concentration of 1 nM) is added to the tubes containing three rings preincubated with 1 mL Krebs' buffer and aerated with 95% O_2 and 5% CO_2 at 37°C. Lisinopril (2 μM), Angiotensin (1-7) (2 μM), or Krebs' buffer as control are added to the rings 10 minutes before addition of the radiolabeled BK. Aliquots of the incubation medium are removed at 5, 10, and 20 minutes and diluted with 1% HFBA to inhibit peptidase activity[1].
	[1]. Vaz-Silva J, et al. The vasoactive peptide angiotensin-(1-7), its receptor Mas and the angiotensin-converting enzyme type 2 are expressed in the human endometrium. Reprod Sci. 2009 Mar;16(3):247-56. [2]. Li P, et al. Angiotensin-(1-7) augments bradykinin-induced vasodilation by competing with ACE

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