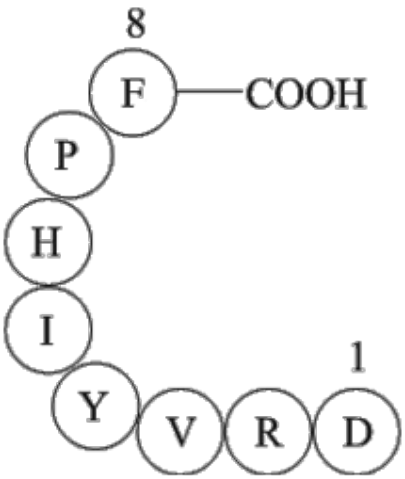
Product Data Sheet

Product Name: Angiotensin II
Cat. No.: GP10023

Chemical Properties

Cas. No.	4474-91-3		
Chemical Name	Angiotensin II		
SMILES	CCC(C)C(C(=O)NC(CC1=CN=CN1)C(=O)N2CCCC2C(=O)NC(CC3=CC=CC=C3)C(=O)O)NC(=O)C(CC4=CC=C(C=C4)O)NC(=O)C(C(C)C)NC(=O)C(CCCN=C(N)N)NC(=O)C(CC(=O)O)N.CC(=O)O		
Formula	$C_{50}H_{71}N_{13}O_{12}$	M.Wt	1046.2
Solubility	≥100.2mg/mL in Water	Storage	Store at -20°C, protect from light, stored under nitrogen
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.		

Structure



Product Data Sheet

Protocol

Cell experiment [1]:

Cell lines	INS-1 cells (rat insulinoma cell line)
Preparation Method	INS-1 cells were cultured in RPMI 1640 medium supplemented with 12% fetal bovine serum, penicillin, and streptomycin at 37°C, 5% CO_2. Cells were treated with Angiotensin II at indicated concentrations and times.
Reaction Conditions	1μM; 24h
Applications	Angiotensin II reduced INS-1 cell viability, increased apoptosis rate and cleaved caspase-3/caspase-3 ratio, upregulated TXNIP mRNA and protein expression, upregulated NLRP3, ASC, and caspase-1 p10 protein expression, and increased IL-1β secretion in the supernatant.

Animal experiment [2]:

Animal models	Male C57BL/6 mice and male Ins+/Akita mice (6 weeks old)
Preparation Method	C57BL/6 and Ins+/Akita mice were subcutaneously infused with Angiotensin II (1.0μg/kg/min) via osmotic minipump for 2 weeks; systolic blood pressure, oral glucose tolerance, and in situ pancreatic perfusion were assessed, and pancreas tissues were collected for histological analysis.
Dosage form	1.0μg/kg/min; s.c. via osmotic minipump; 2 weeks

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Applications	Angiotensin II elevated systolic blood pressure, reduced islet endothelial volume, exacerbated hyperglycemia on oral glucose tolerance test, and decreased glucose-stimulated insulin secretion in both first and second phases during in situ pancreatic perfusion.

References:

[1] Wang J, Feng Y, Huo H, et al. NLRP3 inflammasome mediates angiotensin II-induced islet β cell apoptosis. Acta Biochim Biophys Sin. 2019 May;51(5):501-508.

[2] Ihoriya C, Satoh M, Kuwabara A, et al. Angiotensin II regulates islet microcirculation and insulin secretion in mice. Microcirculation. 2014 Feb;21(2):112-123.

Background

Angiotensin II is a major effector peptide of the renin-angiotensin system (RAS). Angiotensin II binds to AT1R to mediate vasoconstriction and promote cardiac hypertrophy and fibrosis. Angiotensin II activates NADPH oxidase to produce ROS and the NF-κB pathway, exacerbating inflammation and oxidative stress. Angiotensin II can be used in research on hypertension, heart failure, and related cardiovascular diseases[1-4].

In vitro, Angiotensin II (1μM) treated INS-1 rat insulinoma cells for 24h. Angiotensin II reduced INS-1 cell viability, promoted apoptosis, and upregulated TXNIP expression and NLRP3 inflammasome components (NLRP3, ASC, caspase-1 p10)[5]. Amyloid-β(1-42) (0.5μM) pretreated PC12 cells for 24h, then Angiotensin II (5, 50, 500nM) was added for 24h. Angiotensin II dose-dependently upregulated LC3-II/I and Atg3, Atg7, Beclin1 expression, and downregulated p62 and Bcl-2. Angiotensin II significantly induced apoptosis[6].

In vivo, Angiotensin II (1.0μg/kg/min) was subcutaneously infused via osmotic pump into C57BL/6 mice and Ins+/Akita mice for 2 weeks. Angiotensin II elevated systolic blood pressure in mice and reduced islet endothelial volume. Angiotensin II worsened hyperglycemia after oral glucose load and decreased glucose-stimulated insulin secretion under in situ pancreatic perfusion[7]. Angiotensin II (1.44mg/kg) was subcutaneously infused via osmotic pump into arthritis model C57BL/6 mice for 4

weeks. Angiotensin II aggravated arthritis in mice and induced a decrease in talar bone volume[8].

References:

[1] Bumpus FM, Pucell AG, Daud AI, Husain A. Angiotensin II: an intraovarian regulatory peptide. Am J Med Sci. 1988 Apr;295(4):406-8.

[2] Kinugawa S. Angiotensin II and skeletal muscle abnormalities. Exp Physiol. 2017 Jun 1;102(6):614-615.

[3] Ferrario CM. Angiotensin I, angiotensin II and their biologically active peptides. J Hypertens. 2002 May;20(5):805-7.

[4] Peach MJ, Dostal DE. The angiotensin II receptor and the actions of angiotensin II. J Cardiovasc Pharmacol. 1990;16 Suppl 4:S25-30.

[5] Wang J, Feng Y, Huo H, et al. NLRP3 inflammasome mediates angiotensin II-induced islet β cell apoptosis. Acta Biochim Biophys Sin. 2019 May;51(5):501-508.

[6] Tian M, Lin X, Wu L, et al. Angiotensin II Triggers Autophagy and Apoptosis in PC12 Cell Line: An in vitro Alzheimer's Disease Model. Brain Res. 2019 Sep;1718:46-52.

[7] Ihoriya C, Satoh M, Kuwabara A, et al. Angiotensin II regulates islet microcirculation and insulin secretion in mice. Microcirculation. 2014 Feb;21(2):112-123.

[8] Akagi T, Mukai T, Mito T, et al. Effect of Angiotensin II on Bone Erosion and Systemic Bone Loss in Mice with Tumor Necrosis Factor-Mediated Arthritis. Int J Mol Sci. 2020 Jun;21(11):4145.

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