Alamandine

Cat. No.: HY-P3108

CAS No.: 1176306-10-7

Molecular Formula: $C_{40}H_{62}N_{12}O_9$

Molecular Weight: 855

Sequence: Ala-Arg-Val-Tyr-Ile-His-Pro

Sequence Shortening: ARVYIHP

Target: Angiotensin Receptor; Angiotensin-converting Enzyme (ACE)

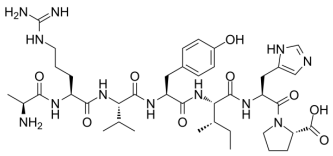
Pathway: GPCR/G Protein; Metabolic Enzyme/Protease

Storage: Sealed storage, away from moisture

Powder -80°C 2 years

-20°C 1 year

* In solvent : -80°C, 6 months; -20°C, 1 month (sealed storage, away from moisture)



SOLVENT & SOLUBILITY

In Vitro

H_2O : 25 mg/mL (29.24 mM; Need ultrasonic)

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	1.1696 mL	5.8480 mL	11.6959 mL
5 mM	0.2339 mL	1.1696 mL	2.3392 mL
10 mM	0.1170 mL	0.5848 mL	1.1696 mL

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

In Vivo

1. Add each solvent one by one: PBS
   Solubility: 25 mg/mL (29.24 mM); Clear solution; Need ultrasonic and warming

BIOLOGICAL ACTIVITY

Description

Alamandine, a member of the renin-angiotensin system (RAS), a vasoactive peptide, is an endogenous ligand of the G protein-coupled receptor MrgD. Alamandine targets to protect the kidney and heart through anti-hypertensive actions[1][2].

In Vitro

Alamandine is generated by catalysis of Ang A via ACE2 or directly from Angiotensin 1-7 (Ang-(1-7)). Derived from angiotensin II (Ang II) by Ang II-converting enzyme 2 (ACE2), it shows vasodilating (thus protective) properties. Ang (1-7) can be decarboxylated to a peptide called Alamandine. Alamandine is also an endogenous peptide identified in human blood[1]. Alamandine elevates cAMP concentration in primary endothelial and mesangial cells, also suggesting Gs coupling[2]. Alamandine decreases secretion, expression, and blood levels of leptin. Alamandine induced expression of iNOS and plasminogen activator inhibitor-1 (PAI-1) in adipose tissue and isolated adipocytes[2].

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

In Vivo

Alamandine (0.15 μL/h; administered by mini-osmotic pumps; for 6 weeks) treatment ameliorates hypertension and impaires left ventricle (LV) function in SHRs. Also decreases the mass gains of heart and lung in SHRs, suppresses cardiomyocyte cross-sectional area expansion, and inhibits the mRNA levels of atrial natriuretic peptide and brain natriuretic peptide[3].

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Animal Model:	Male spontaneously hypertensive rats (SHRs, 50-week-old)[3]
Dosage:	0.15 μL/h (~50 μg/kg/day)
Administration:	Administered by mini-osmotic pumps; for 6 weeks
Result:	Attenuated hypertension, alleviated cardiac hypertrophy, and improved LV function.

REFERENCES

[1]. Daniel C Villela, et al. Alamandine: a new member of the angiotensin family. Curr Opin Nephrol Hypertens. 2014 Mar;23(2):130-4.

[2]. Johanna Schleifenbaum. Alamandine and Its Receptor MrgD Pair Up to Join the Protective Arm of the Renin-Angiotensin System. Front Med (Lausanne). 2019 Jun 11;6:107.

[3]. Chi Liu, et al. Alamandine attenuates hypertension and cardiac hypertrophy in hypertensive rats. Amino Acids. 2018 Aug;50(8):1071-1081.

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