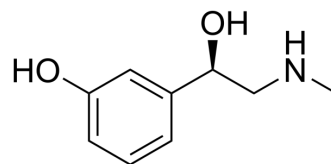


## Phenylephrine

<b>Cat. No.:</b>	HY-B0769		
<b>CAS No.:</b>	59-42-7		
<b>Molecular Formula:</b>	C <sub>9</sub> H <sub>13</sub> NO <sub>2</sub>		
<b>Molecular Weight:</b>	167.21		
<b>Target:</b>	Adrenergic Receptor		
<b>Pathway:</b>	GPCR/G Protein; Neuronal Signaling		
<b>Storage:</b>	Powder	-20°C	3 years
		4°C	2 years
	In solvent	-80°C	6 months
		-20°C	1 month



### SOLVENT & SOLUBILITY

#### In Vitro

DMSO : 50 mg/mL (299.03 mM; Need ultrasonic)  
 H<sub>2</sub>O : 5 mg/mL (29.90 mM; Need ultrasonic)

Preparing Stock Solutions	Solvent Concentration	Mass		
		1 mg	5 mg	10 mg
	1 mM	5.9805 mL	29.9025 mL	59.8050 mL
	5 mM	1.1961 mL	5.9805 mL	11.9610 mL
	10 mM	0.5981 mL	2.9903 mL	5.9805 mL

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

#### In Vivo

1. Add each solvent one by one: PBS  
 Solubility: 10 mg/mL (59.81 mM); Clear solution; Need ultrasonic and warming

### BIOLOGICAL ACTIVITY

#### Description

(R)-(-)-Phenylephrine is a selective  $\alpha_1$ -adrenoceptor agonist primarily used as a decongestant.

#### IC<sub>50</sub> & Target

$\alpha$  adrenergic receptor

#### In Vitro

(R)-(-)-Phenylephrine is a selective  $\alpha_1$ -adrenoceptor agonist with pK<sub>i</sub> values of 5.86, 4.87 and 4.70 for  $\alpha_{1D}$ ,  $\alpha_{1B}$  and  $\alpha_{1A}$  receptors respectively<sup>[1][2]</sup>.

Phenylephrine promotes cardiac fibroblast proliferation. Phenylephrine activates CaN and evokes NFAT3 nuclear translocation. It suggests that the Ca(2<sup>+</sup>)/CaN/NFAT pathway mediates phenylephrine -induced cardiac fibroblast proliferation, and this pathway might be a possible therapeutic target in cardiac fibrosis<sup>[3]</sup>.

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

## In Vivo

Perfusion of hearts with 100  $\mu$ M phenylephrine causes a rapid (maximal at 10 min) 12-fold activation of two p38-MAPK isoforms.  $\alpha_1$ -adrenoceptor agonists such as phenylephrine increase the contractility of the heart. Phenylephrine also activates SAPKs/JNKs in neonatal ventricular myocytes<sup>[4]</sup>. Phenylephrine could increase the alveolar fluid clearance in high tidal volume-ventilated rats and accelerate the absorption of pulmonary edema<sup>[5]</sup>. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

## PROTOCOL

### Animal Administration<sup>[5]</sup>

Rats: A total of 170 male Wistar rats are randomly allocated into 17 groups (n=10) using random number tables. Short-term (40 minutes) mechanical ventilation with high tidal volume is performed to induce lung injury, impair active Na<sup>+</sup> transport and lung liquid clearance in the rats. Unventilated rats serve as controls. To demonstrate the effect of phenylephrine on alveolar fluid clearance, phenylephrine at different concentrations (10, 1, 0.1, 0.01, and 0.001  $\mu$ M) is injected into the alveolar space of the HVT ventilated rats<sup>[5]</sup>. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

## CUSTOMER VALIDATION

- Free Radic Biol Med. 2024 Jan 6;S0891-5849(24)00007-8.
- Biochim Biophys Acta Mol Basis Dis. 2023 Aug 27;166859.
- Sci Rep. 2023 Oct 2;13(1):16550.
- J Endod. 2023 Sep 26;S0099-2399(23)00608-8.
- Front Cardiovasc Med. 2021 Jun 16;8:679240.

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## REFERENCES

- [1]. Ford AP, et al. Pharmacological pleiotropism of the human recombinant alpha1A-adrenoceptor: implications for alpha1-adrenoceptor classification. Br J Pharmacol. 1997 Jul;121(6):1127-35.
- [2]. Minneman KP, et al. Selectivity of agonists for cloned alpha 1-adrenergic receptor subtypes. Mol Pharmacol. 1994 Nov;46(5):929-36.
- [3]. Wang J, et al. Phenylephrine promotes cardiac fibroblast proliferation through calcineurin-NFAT pathway. Front Biosci (Landmark Ed). 2016 Jan 1;21:502-13.
- [4]. Lazou A, et al. Activation of mitogen-activated protein kinases (p38-MAPKs, SAPKs/JNKs and ERKs) by the G-protein-coupled receptor agonist phenylephrine in the perfused rat heart. Biochem J. 1998 Jun 1;332 ( Pt 2):459-65.
- [5]. Li NJ, et al. Effect of phenylephrine on alveolar fluid clearance in ventilator-induced lung injury. Chin Med Sci J. 2013 Mar;28(1):1-6.

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

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