Prostaglandin E1

Cat. No.: HY-B0131

CAS No.: 745-65-3

Molecular Formula: $C_{20}H_{34}O_5$

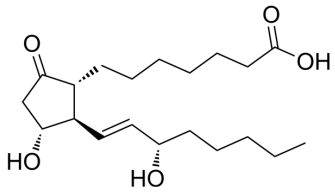
Molecular Weight: 354.48

Target: Prostaglandin Receptor; Endogenous Metabolite

Pathway: GPCR/G Protein; Metabolic Enzyme/Protease

Storage: 4°C, stored under nitrogen

* In solvent : -80°C, 6 months; -20°C, 1 month (stored under nitrogen)



SOLVENT & SOLUBILITY

In Vitro

Ethanol : 100 mg/mL (282.10 mM; Need ultrasonic)

DMSO : 100 mg/mL (282.10 mM; Need ultrasonic)

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	2.8210 mL	14.1052 mL	28.2103 mL
5 mM	0.5642 mL	2.8210 mL	5.6421 mL
10 mM	0.2821 mL	1.4105 mL	2.8210 mL

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

In Vivo

1. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 2.5 mg/mL (7.05 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.5 mg/mL (7.05 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (7.05 mM); Clear solution
4. Add each solvent one by one: 10% EtOH >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 2.5 mg/mL (7.05 mM); Clear solution
5. Add each solvent one by one: 10% EtOH >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.5 mg/mL (7.05 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Prostaglandin E1 (Alprostadil) is a prostanoid receptor ligand, with K_is of 1.1 nM, 2.1 nM, 10 nM, 33 nM and 36 nM for mouse EP3, EP4, EP2, IP and EP1, respectively. Prostaglandin E1 induces vasodilation and inhibits platelet aggregation. Prostaglandin E1 can be used as a vasodilator for the research of peripheral vascular diseases[1][2][3].

IC_{50} & Target	EP	Human Endogenous Metabolite

In Vitro

Prostaglandin E1 (1 nM-10 μM; 48 h) concentration-dependently reduces HUVECs proliferation (up to 100% inhibition) in the presence of VEGF (20 ng/mL), with an IC_{50} of 400 nM[2].
Prostaglandin E1 (0.01-10 μM; 6 h) inhibits VEGF-induced HUVECs migration in a concentration dependent manner, with an IC_{50} of 500 nM[2].
Prostaglandin E1 (1-5 μM; 12-18 h) inhibits in vitro angiogenesis[2].
Prostaglandin E1 (0.01-10 μM; 20 min) increases intracellular cAMP levels in HUVECs[2].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

In Vivo

Prostaglandin E1 (20 ng/animal/day; s.c. for 4 days) significantly inhibits the FGF-induced angiogenesis in mice[2].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Animal Model:	C57/bl6 female mice (6-8 weeks) were injected with Matrigel supplemented with aFGF and heparin[2]
Dosage:	20 ng/day/animal
Administration:	Minipump placed subcutaneously for 4 days
Result:	Visibly reduced the neovascularization process.

CUSTOMER VALIDATION

- Nat Cell Biol. 2024 Jul 12.
- Small Structures. 2023 Mar 8.
- Acta Pharm Sin B. 12 January 2022.
- J Control Release. 2019 May 6;304:233-241.
- J Thromb Haemost. 2024 Jan 22:S1538-7836(24)00041-2.

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REFERENCES

[1]. Kiriyama M, et, al. Ligand binding specificities of the eight types and subtypes of the mouse prostanoid receptors expressed in Chinese hamster ovary cells. Br J Pharmacol. 1997 Sep;122(2):217-24.

[2]. Cattaneo MG, et, al. Alprostadil suppresses angiogenesis in vitro and in vivo in the murine Matrigel plug assay. Br J Pharmacol. 2003 Jan;138(2):377-85.

[3]. Hauck EW, et, al. Prostaglandin E1 long-term self-injection programme for treatment of erectile dysfunction--a follow-up of at least 5 years. Andrologia. 1999;31 Suppl 1:99-103.

Tel: 609-228-6898 Fax: 609-228-5909 E-mail: tech@MedChemExpress.com
Address: 1 Deer Park Dr, Suite Q, Monmouth Junction, NJ 08852, USA