α-Vitamin E

Cat. No.: HY-N0683

CAS No.: 59-02-9

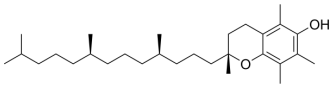
Molecular Formula: $C_{29}H_{50}O_2$

Molecular Weight: 430.71

Target: Reactive Oxygen Species; Endogenous Metabolite; Bacterial; Ferroptosis; Influenza Virus

Pathway: Immunology/Inflammation; Metabolic Enzyme/Protease; NF-κB; Anti-infection; Apoptosis

Storage: 4°C, protect from light, stored under nitrogen
* In solvent : -80°C, 6 months; -20°C, 1 month (protect from light, stored under nitrogen)



SOLVENT & SOLUBILITY

In Vitro

DMSO : 100 mg/mL (232.17 mM; Need ultrasonic)
Ethanol : 100 mg/mL (232.17 mM; Need ultrasonic)
H_2O : < 0.1 mg/mL (ultrasonic) (insoluble)

Preparing Stock Solutions	Mass / Solvent / Concentration	1 mg	5 mg	10 mg
	1 mM	2.3217 mL	11.6087 mL	23.2175 mL
	5 mM	0.4643 mL	2.3217 mL	4.6435 mL
	10 mM	0.2322 mL	1.1609 mL	2.3217 mL

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

In Vivo

1. Add each solvent one by one: 10% EtOH >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 11.25 mg/mL (26.12 mM); Clear solution
2. Add each solvent one by one: 10% EtOH >> 90% (20% SBE-β-CD in saline)
   Solubility: 11.25 mg/mL (26.12 mM); Suspended solution; Need ultrasonic
3. Add each solvent one by one: 10% EtOH >> 90% corn oil
   Solubility: ≥ 11.25 mg/mL (26.12 mM); Clear solution
4. Add each solvent one by one: 0.5% CMC-Na/saline water
   Solubility: 10 mg/mL (23.22 mM); Suspended solution; Need ultrasonic
5. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 2.5 mg/mL (5.80 mM); Clear solution
6. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: 2.5 mg/mL (5.80 mM); Suspended solution; Need ultrasonic
7. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (5.80 mM); Clear solution

BIOLOGICAL ACTIVITY

Description	α-Vitamin E ((+)-α-Tocopherol), a naturally occurring vitamin E form, is a potent antioxidant[1][2].
IC_{50} & Target	Human Endogenous Metabolite
In Vitro	α-Vitamin E ((+)-α-Tocopherol) is a peroxyl radical scavenger. The importance of this function is to maintain the integrity of long-chain polyunsaturated fatty acids in the membranes of cells and thus maintain their bioactivity[1]. α-Vitamin E ((+)-α-Tocopherol) has been described to inhibit PKC in various cell types with consequent inhibition of platelet aggregation, endothelial cell nitric oxide production and superoxide production in neutrophils and macrophages. α-Vitamin E ((+)-α-Tocopherol) exposure induced the activation of both the MAP kinase and PI3 kinase (PI3K) pathways, suggesting that it is the oxidative stress that up-regulates kinase pathways and the antioxidant action of α-tocopherol protects the cell membrane fatty acids[1]. α-Vitamin E ((+)-α-Tocopherol) has proposed benefits for influenza virus A infection, as well as possible activity against hepatitis B and C. α-Vitamin E shows proviral effects, particularly in HEK293T/17 cells[3]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
In Vivo	α-Vitamin E ((+)-α-Tocopherol) prevents the increase in the pro-inflammatory cytokines IL-1, IL-6, and IFN-γ mRNA and protein compared with the ischemic-reperfused myocardium from untreated pigs and compared to the non-injured area[1]. α-Vitamin E (D-α-Tocopherol; intraperitoneal injection or oral administration) treatment induces an amelioration of diabetic nephropathy in mice through the activation of diacylglycerol kinase α (DGKα) and the prevention of podocyte loss[2]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

CUSTOMER VALIDATION

- Nat Nanotechnol. 2021 Oct;16(10):1150-1160.
- Nat Commun. 2023 Oct 30;14(1):6908.
- Cell Rep Med. 2024 May 29:101592.
- Redox Biol. 2022 Aug;54:102392.
- Biomed Pharmacother. 2024 Jun:175:116734.

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REFERENCES

[1]. Maret G Traber, et al. Vitamin E, antioxidant and nothing more. Free Radic Biol Med. 2007 Jul 1;43(1):4-15.

[2]. Daiki Hayashi, et al. Amelioration of diabetic nephropathy by oral administration of d-α-tocopherol and its mechanisms. Biosci Biotechnol Biochem. 2018 Jan;82(1):65-73.

[3]. Atchara Paemanee, et al. Screening of melatonin, α-tocopherol, folic acid, acetyl-L-carnitine and resveratrol for anti-dengue 2 virus activity. BMC Res Notes. 2018 May 16;11(1):307.

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