Trolox

Cat. No.: HY-101445

CAS No.: 53188-07-1

Molecular Formula: $C_{14}H_{18}O_4$

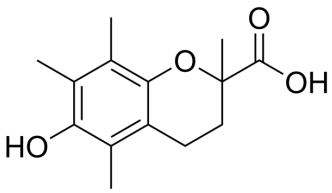
Molecular Weight: 250.29

Target: Reactive Oxygen Species; Apoptosis; Ferroptosis

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

Storage:

Powder	-20°C	3 years
	4°C	2 years
In solvent	-80°C	1 year
	-20°C	6 months



SOLVENT & SOLUBILITY

In Vitro

DMSO : ≥ 100 mg/mL (399.54 mM)

H_2O : < 0.1 mg/mL (ultrasonic;warming;heat to 60°C) (insoluble)

* "≥" means soluble, but saturation unknown.

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	3.9954 mL	19.9768 mL	39.9537 mL
5 mM	0.7991 mL	3.9954 mL	7.9907 mL
10 mM	0.3995 mL	1.9977 mL	3.9954 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: ≥ 2.08 mg/mL (8.31 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.08 mg/mL (8.31 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.08 mg/mL (8.31 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Trolox is an analogue of vitamin E with a powerful antioxidant effect. Trolox is also a powerful inhibitor of membrane damage[1][2].

In Vitro

Trolox has shown to protect mammalian cells from oxidative damage. Trolox is effective in preventing myocyte necrosis in cell culture studies and in a canine model of two hours of left anterior descending coronary artery (LAD) occlusion followed

by four hours of reperfusion[1].
?Trolox could prevent oxidative stress-induced apoptosis in thymocytes. Pre- or post-treatment of cells with Trolox reduced H_2O_2-induced DNA fragmentation to control levels and below. [2].
? ?Trolox is a hydrophilic analog of alpha-tocopherol and reported to scavenge peroxyl radicals better than vitamin E in sodium dodecyl sulfate micelles and in liposomes. Trolox prolongs substantially the survival of human ventricular myocytes and hepatocyte against oxyradicals generated with xanthine oxidase plus hypoxanthine, and prevented lysis of red cells exposed to an azo-initiator[3].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

PROTOCOL

Cell Assay [1]

Thymocytes are treated with Trolox (10 mM) before, during, or after 10 min exposure to 10 μM H_2O_2. Trolox incubations that are conducted before or after H_2O_2 exposures are performed in TCM. Trolox treatments that are administered concurrently with H_2O_2 are performed in PBS with ferrous sulfate[1].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

CUSTOMER VALIDATION

- Int J Biol Sci. 2023 Feb 27;19(5):1471-1489.
- Cell Death Dis. 2021 Apr 1;12(4):338.
- Cell Rep. 2022 Oct 11;41(2):111462.
- Cell Rep. 2022 Sep 20;40(12):111381.
- Cell Biosci. 2023 May 13;13(1):87.

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REFERENCES

[1]. Mickle DA, et al. Myocardial salvage with trolox and ascorbic acid for an acute evolving infarction. Ann Thorac Surg. 1989 Apr;47(4):553-7.

[2]. Forrest VJ, et al. Oxidative stress-induced apoptosis prevented by Trolox. Free Radic Biol Med. 1994 Jun;16(6):675-84.

[3]. Wu TW, et al. The cytoprotective effect of Trolox demonstrated with three types of human cells. Biochem Cell Biol. 1990 Oct;68(10):1189-94.

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