All-trans-retinal

Cat. No.: HY-W004500

CAS No.: 116-31-4

Molecular Formula: $C_{20}H_{28}O$

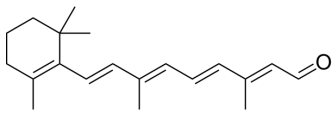
Molecular Weight: 284.44

Target: Endogenous Metabolite; Apoptosis

Pathway: Metabolic Enzyme/Protease; Apoptosis

Storage: -20°C, protect from light, stored under nitrogen

* The compound is unstable in solutions, freshly prepared is recommended.



SOLVENT & SOLUBILITY

In Vitro

DMSO : 100 mg/mL (351.57 mM; Need ultrasonic)

Preparing Stock Solutions	Solvent / Mass / Concentration	1 mg	5 mg	10 mg
	1 mM	3.5157 mL	17.5784 mL	35.1568 mL
	5 mM	0.7031 mL	3.5157 mL	7.0314 mL
	10 mM	0.3516 mL	1.7578 mL	3.5157 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 (7.31 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: 2.08 mg/mL (7.31 mM); Suspended solution; Need ultrasonic
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.08 mg/mL (7.31 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

All-trans-retinal is an vitamin A metabolite in the retina, and is produced following photo-isomerization of the visual chromophore 11-cis-Retinal. All-trans-retinal is cleared from photoreceptors by ATP-binding cassette transporter (ABCA4) and all-trans-retinol dehydrogenase (RDH). All-trans-retinal induces Bax activation via DNA damage to mediate retinal cell apoptosis[1].

IC_{50} & Target

Human Endogenous Metabolite

In Vitro

All-trans-retinal (10-30 μM; 16 h) displays a dose-dependent toxicity which included the morphological disruption of ARPE-19 cells and a decrease in their viability is observed to be time-dependent measured by LDH assay[1].

All-trans-retinal (10-30 μM; 30 mim) increases the phosphorylation of p53 at Ser 46 and 8-OHdG production[1].

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

Cell Viability Assay[1]

Cell Line:	ARPE-19 cells
Concentration:	10 μM, 20 μM, 30 μM
Incubation Time:	16 h
Result:	Displayed a dose-dependent toxicity which included the morphological disruption of ARPE-19 cells.

Western Blot Analysis[1]

Cell Line:	ARPE-19 cells
Concentration:	10 μM, 30 μM
Incubation Time:	30 min
Result:	The phosphorylation of p53 at Ser 46 were detected prior to Bax activation in ARPE-19 cells.

REFERENCES

[1]. Sawada O, et al. All-trans-retinal induces Bax activation via DNA damage to mediate retinal cell apoptosis. Exp Eye Res. 2014 Jun;123:27-36.

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