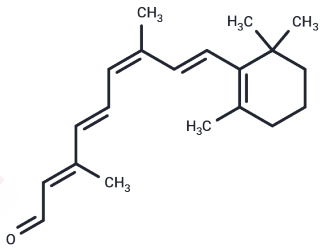
Data Sheet (Cat.No.T19169)

TargetMol

9-cis-Retinal

Chemical Properties



CAS No. : 514-85-2

Formula: C20H28O

Molecular Weight: 284.44

Storage: Keep away from direct sunlight,Store at low temperature
Powder: -20°C for 3 years | In solvent: -80°C for 1 year
Actual storage temperature shall be subject to the COA.

Biological Description

Description	9-cis-Retinal is a retinoid with Kd of 8 nM and 5 nM for cellular retinol binding protein-I (CRBP-1) and CRBP-II, respectively. 9-cis-Retinal accelerates the differentiation and maturation of rod photoreceptors in retinal organoids, reduces the toxicity of unliganded opsins, and can be used to study congenital stationary night blindness caused by G90D rhodopsin.
Targets(IC50)	Endogenous Metabolite
In vitro	b>METHODS: The binding of 9-cis-retinol, 9-cis-retinal, and 9-cis-RA to CRBPI and CRBPII was monitored through fluorescence spectroscopy, and the data were analyzed using nonlinear regression to determine the apparent dissociation constant K'(d) . **RESULTS**: CRBPI and CRBPII bind to 9-cis-retinol (K'(d), 11nM and 68nM) and 9-cis-retinal (K'(d), 8nM and 5nM) respectively with high affinity; CRBPI or CRBPII have not been observed yet. Significant binding of CRBPII to 9-cis-RA. [1]
In vivo	b>METHODS: After recording baseline ERG, IRBP-deficient mice were allowed to rest for 12 hours, and 0.375 mg of 9-cis-retinal was injected intraperitoneally. ERG before and after were analyzed to test 11-cis-retinal in cones of IRBP-deficient mice. retinal defects. **RESULTS**: 9-cis-retinal treatment significantly increased cone photoreceptor responses; the cones of IRBP-deficient mice were particularly sensitive to exogenous 9-cis-retinal, and the recovery of cone photoreceptor function to WT levels indicated that IRBP deletion had minimal Cone dysfunction in mice is caused by 11-cis-retinal deficiency. [4]

Solubility Information

Solubility	DMSO: 10 mg/mL (35.16 mM),Sonication is recommended. (< 1 mg/ml refers to the product slightly soluble or insoluble)
In vivo Formulation	10% DMSO+90% Corn Oil: 1 mg/mL (3.52 mM),Sonication is recommended. *Please add the solvents sequentially, clarifying the solution as much as possible before adding the next one. Dissolve by heating and/or sonication if necessary. Working solution is recommended to be prepared and used immediately. The formulation provided above is for reference purposes only. In vivo formulations may vary and should be modified based on specific experimental conditions.*

Preparing Stock Solutions

	1mg	5mg	10mg
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
50 mM	0.0703 mL	0.3516 mL	0.7031 mL

Please select the appropriate solvent to prepare the stock solution, according to the solubility of the product in different solvents. Please use it as soon as possible.

Note: The dilution table applies only to solid products. For liquid products, please calculate the stock solution based on the stated concentration and/or density.

Reference

Kane MA, et al. Binding affinities of CRBPI and CRBPII for 9-cis-retinoids.Biochim Biophys Acta. 2011 May;1810(5):514-8.
Mertz JR, et al. Identification and characterization of a stereospecific human enzyme that catalyzes 9-cis-retinol oxidation. A possible role in 9-cis-retinoic acid formation. J Biol Chem. 1997 May 2;272(18):11744-9.
Kaya KD, et al. Transcriptome-based molecular staging of human stem cell-derived retinal organoids uncovers accelerated photoreceptor differentiation by 9-cis retinal. Mol Vis. 2019 Nov 11;25:663-678.
Parker RO, et al. Normal cone function requires the interphotoreceptor retinoid binding protein. J Neurosci. 2009 Apr 8;29(14):4616-21.