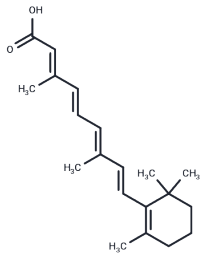
Data Sheet (Cat.No.T1051)

TargetMol

Retinoic acid

Chemical Properties



CAS No. : 302-79-4

Formula: C20H28O2

Molecular Weight: 300.44

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	Retinoic acid (Tretinoin), a metabolite of vitamin A, is a natural agonist of the retinoic acid receptor RAR and inhibits RARα/β/γ (IC50=14 nM). Retinoic acid induces cellular differentiation, reduces cellular proliferation, and inhibits tumorigenesis.
Targets(IC50)	Retinoid Receptor,Endogenous Metabolite,Autophagy,PPAR
In vitro	Tretinoin prevents skin atrophy induced by corticosteroids in hairless mice. When co-administered with miquimod in guinea pigs, tretinoin induces tattoo fading and moderate pigment clearance histopathologically. Applications of tretinoin on incisions in the skin of 45 CD-1 mice increase fibroblast differentiation and reduce collagen production. In aged male Fischer 344 rats treated with tretinoin, renal cortex protein content is 30% lower compared to controls, potentially due to suppressed expression of tumor necrosis factor-β1 and osteopontin.
In vivo	In studies evaluating the impact on glutathione levels and catalase activity, Tretinoin increased both metrics in a time- and dose-dependent manner, offering protective and mitigating effects against H2O2 cytotoxicity in human renal mesangial cells. Treatment with Tretinoin resulted in elevated mRNA levels of catalase and γ-glutamylcysteine synthetase (the catalytic subunit responsible for the rate-limiting step in reduced glutathione synthesis) in cultured mesangial cells. Additionally, Tretinoin upregulated matrix metalloproteinase-8/13 in human keloid-derived fibroblasts.
Cell Research	Retinoic acid is dissolved in DMSO and stored, and then diluted with appropriate medium before use[3]. P19 cell are induced to undergo neuronal differentiation according to established procedures. Briefly, cells are cultured on 1% agarose-coated 10 cm dishes at 3×10 5 cells/mL in α-minimal essential medium supplemented with 10% FBS. Differentiation is induced by addition of Retinoic acid (1 μM) and medium containing Retinoic acid replaced 2 days later. On day 4, cell aggregates are collected by centrifugation, separated to single cells by trypsin/EDTA treatment, replated onto poly-L-lysine-coated plates, and cultured in α-minimal essential medium supplemented with 10% FBS. On day 6, medium is replaced with neurobasal medium containing B27 supplement and 2 mM GlutaMAX. Medium is replaced every 2 days for an additional week[3].

Solubility Information

Solubility	DMSO: 95 mg/mL (316.2 mM),Sonication is recommended. Ethanol: 6 mg/mL (19.97 mM),Sonication is recommended. H2O: < 1 mg/mL (insoluble or slightly soluble), (< 1 mg/ml refers to the product slightly soluble or insoluble)
In vivo Formulation	10% DMSO+40% PEG300+5% Tween 80+45% Saline: 5.6 mg/mL (18.64 mM),Suspension. *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	3.3285 mL	16.6423 mL	33.2845 mL
5 mM	0.6657 mL	3.3285 mL	6.6569 mL
10 mM	0.3328 mL	1.6642 mL	3.3285 mL
50 mM	0.0666 mL	0.3328 mL	0.6657 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

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