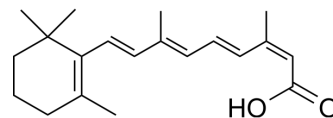


## Isotretinoin

Cat. No.:	HY-15127
CAS No.:	4759-48-2
Molecular Formula:	C <sub>20</sub> H <sub>28</sub> O <sub>2</sub>
Molecular Weight:	300.44
Target:	RAR/RXR; Endogenous Metabolite; Autophagy
Pathway:	Metabolic Enzyme/Protease; Vitamin D Related/Nuclear Receptor; Autophagy
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 (332.85 mM; Need ultrasonic)						
	Preparing Stock Solutions	Solvent Concentration	Mass	1 mg	5 mg	10 mg	
				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
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: ≥ 2.5 mg/mL (8.32 mM); Clear solution						
	2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline) Solubility: 2.5 mg/mL (8.32 mM); Suspended solution; Need ultrasonic						
	3. Add each solvent one by one: 10% DMSO >> 90% corn oil Solubility: ≥ 2.08 mg/mL (6.92 mM); Clear solution						

### BIOLOGICAL ACTIVITY

Description	Isotretinoin (13-cis-Retinoic acid) is an orally active vitamin A derivative and is often be used for the research of severe acne. Isotretinoin also shows anticancer activity <sup>[1][2]</sup> .
IC <sub>50</sub> & Target	Human Endogenous Metabolite
In Vitro	Isotretinoin (13-cis-Retinoic acid) may act as a pro-drug that is converted intracellularly to metabolites that are agonists for RAR and RXR nuclear receptors <sup>[1]</sup> . Isotretinoin is highly sensitive to air, heat, and light <sup>[3]</sup> . Isotretinoin (0-40 μM; 24-96 h) significantly inhibits HepG2 cell viability <sup>[4]</sup> .

Isotretinoin (10  $\mu$ M; 48 h) down-regulates c-MYC mRNA expression and this is partially due to P1 or P2 promoter activity<sup>[4]</sup>. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

#### Cell Viability Assay<sup>[4]</sup>

Cell Line:	HepG2
Concentration:	0.1, 0.5, 1, 5, 10, 20, and 40 $\mu$ M
Incubation Time:	24, 48, 72, and 96 h
Result:	Showed a significant reduction in cell viability (less than 30%) at 96 h for all doses.

#### RT-PCR<sup>[4]</sup>

Cell Line:	HepG2
Concentration:	10 $\mu$ M
Incubation Time:	48 h
Result:	Significantly reduced the expression of c-MYC mRNA by ~80%.

#### In Vivo

Isotretinoin (13-cis-Retinoic acid) (1.3-481  $\mu$ g/L; inhalation exposure; 45 min daily for 2 weeks) is an effective lung cancer chemopreventive agent in A/J Mice<sup>[2]</sup>.

Isotretinoin accelerates alveolar repair after exodontia in rats<sup>[3]</sup>.

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

Animal Model:	Male A/J mice, lung carcinogenesis model <sup>[2]</sup>
Dosage:	1.3, 20.7, or 481 $\mu$ g/L
Administration:	Inhalation exposure, 45 min daily for 2 weeks
Result:	Reduced the tumor multiplicity. Caused up-regulation of lung tissue nuclear retinoic acid receptors (RARs) relative to vehicle-exposed mice, RAR $\alpha$ (3.9-fold vehicle), RAR $\beta$ (3.3-fold), and RAR $\gamma$ (3.7-fold) at 20.7 $\mu$ g/L.

Animal Model:	Wistar rats, tooth extraction model <sup>[3]</sup>
Dosage:	7.5 mg/kg
Administration:	Oral gavage, daily for 30 days
Result:	Accelerated the process of alveolar repair, significantly decreased serum calcium levels.

#### CUSTOMER VALIDATION

- Proc Natl Acad Sci U S A. 2021 Jan 12;118(2):e2009539118.
- Cell Oncol. 2023 Jul 19.
- Eur J Pharmacol. 2019 May 15;851:174-185.
- Fundam Clin Pharmacol. 2020 Jun;34(3):380-388.

## REFERENCES

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- [1]. Layton A. The use of isotretinoin in acne. *Dermatoendocrinol.* 2009 May;1(3):162-9.
- [2]. Dahl AR, et al. Inhaled isotretinoin (13-cis retinoic acid) is an effective lung cancer chemopreventive agent in A/J mice at low doses: a pilot study. *Clin Cancer Res.* 2000 Aug;6(8):3015-24
- [3]. Bergoli RD, et al. Isotretinoin effect on alveolar repair after exodontia--a study in rats. *Oral Maxillofac Surg.* 2011 Jun;15(2):85-92.
- [4]. Ramírez-Flores PN, et al. Isotretinoin and Thalidomide Down-Regulate c-MYC Gene Expression and Modify Proteins Associated with Cancer in Hepatic Cells. *Molecules.* 2021 Sep 22;26(19):5742.
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**Caution: Product has not been fully validated for medical applications. For research use only.**

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