β-Carotene

Cat. No.: HY-N0411

CAS No.: 7235-40-7

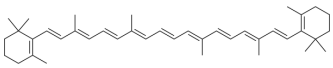
Molecular Formula: $C_{40}H_{56}$

Molecular Weight: 536.87

Target: Endogenous Metabolite; Apoptosis; Reactive Oxygen Species

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

Storage: -20°C, protect from light, stored under nitrogen
* In solvent : -80°C, 6 months; -20°C, 1 month (protect from light, stored under nitrogen)



SOLVENT & SOLUBILITY

In Vitro

THF : 12.5 mg/mL (23.28 mM; ultrasonic and warming and heat to 60°C)
DMSO : 1 mg/mL (1.86 mM; ultrasonic and warming and heat to 60°C)

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	1.8626 mL	9.3132 mL	18.6264 mL
5 mM	0.3725 mL	1.8626 mL	3.7253 mL
10 mM	0.1863 mL	0.9313 mL	1.8626 mL

Please refer to the solubility information to select the appropriate solvent.

In Vivo

1. Add each solvent one by one: 15% Cremophor EL >> 85% Saline
Solubility: 10 mg/mL (18.63 mM); Suspended solution; Need ultrasonic

BIOLOGICAL ACTIVITY

Description

β-Carotene (Provitamin A), a carotenoid compound, is a naturally-occurring vitamin A precursor. β-Carotene is a modulator of reactive oxygen species (ROS), with antioxidant and antiinflammatory activities. β-Carotene may serve as an antioxidant or as a prooxidant, depending on its intrinsic properties as well as on the redox potential of the biological environment in which it acts. β-Carotene induces breast cancer cells apoptosis, with anticancer activities[1][2][3][4][5].

IC_{50} & Target

Human Endogenous Metabolite	apoptosis

In Vitro

β-Carotene up-regulates PPAR-γ expression and ROS production in MCF-7 cancer cells[3].
β-Carotene (1-100 μM; 72 hours) remarkably decreases the survival of MCF-7 cells in a dose-dependent manner[3].
β-Carotene (50 μM; 24-72 hours) significantly enhances the expression levels of PPAR-γ mRNA and protein in a time-dependent manner[3].

β-Carotene down-regulates the COX-2 but up-regulates the p21 mRNA level and protein expression in a time dependent manner[3].
β-Carotene significantly increases the percentage of early apoptosis and the effect was partly attenuated by pre-incubation with GW9662 (HY-16578) or GSH (HY-D0187)[3].
β-Carotene induces cytochrome C release[3].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Cell Viability Assay[5]

Cell Line:	MCF-7 cells
Concentration:	1 μM, 10 μM, 20 μM, 50 μM, 100 μM
Incubation Time:	72 hours
Result:	Decreased the numbers of viable cells to 70% and 50% at 20 μM and 50 μM, respectively.

RT-PCR[5]

Cell Line:	MCF-7 cells
Concentration:	50 μM
Incubation Time:	24 hours, 48 hours, 72 hours
Result:	Up-regulated the PPAR-γ mRNA.

Western Blot Analysis[5]

Cell Line:	MCF-7 cells
Concentration:	50 μM
Incubation Time:	24 hours, 48 hours, 72 hours
Result:	Up-regulated PPAR-γ protein expression levels.

Apoptosis Analysis[5]

Cell Line:	MCF-7 cells
Concentration:	50 μM
Incubation Time:	72 hours
Result:	Induced MCF-7 cells apoptosis.

CUSTOMER VALIDATION

- Evid-Based Compl Alt. 17 Jun 2022.

See more customer validations on www.MedChemExpress.com

REFERENCES

[1]. Tanumihardjo, S.A., Factors influencing the conversion of carotenoids to retinol: bioavailability to bioconversion to bioefficacy. Int J Vitam Nutr Res, 2002. 72(1): p. 40-5.

[2]. Leo, M.A., et al. Alcohol, vitamin A, and beta-carotene: adverse interactions, including hepatotoxicity and carcinogenicity. Am J Clin Nutr, 1999. 69(6): p. 1071-85.

[3]. Yanhong Cui, et al. beta-Carotene induces apoptosis and up-regulates peroxisome proliferator-activated receptor gamma expression and reactive oxygen species production in MCF-7 cancer cells. Eur J Cancer. 2007 Nov;43(17):2590-601.

[4]. Paola Palozza, et al. Prooxidant effects of beta-carotene in cultured cells. Mol Aspects Med. 2003 Dec;24(6):353-62.

[5]. AKIFUMI KAWATA, et al. Anti-inflammatory Activity of β-Carotene, Lycopene and Tri-n-butylborane, a Scavenger of Reactive Oxygen Species. In Vivo. 2018 Mar-Apr; 32(2): 255-264.

Tel: 609-228-6898 Fax: 609-228-5909 E-mail: tech@MedChemExpress.com

Address: 1 Deer Park Dr, Suite Q, Monmouth Junction, NJ 08852, USA