

Product Data Sheet

Product Name: Lycopene

Cat. No.: GN10448

Chemical Properties

Cas. No. 502-65-8

Chemical Name (6E,8E,10E,12E,14E,16E,18E,20E,22E,24E,26E)-2,6,10,14,19,23,27,31-octamethyldotriaconta-2,6,8,10,12,14,16,18,20,22,24,26,30-tridecaene

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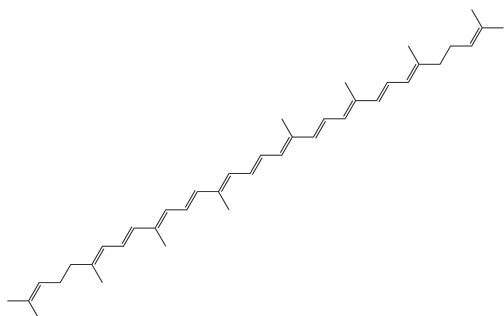
Formula C₄₀H₅₆ M.Wt 536.89

Solubility <3.03 mg/mL in 0.5MNAOH; DMSO:12mg/ml Storage Store at -20°C, protect from light, stored under nitrogen

General tips For obtaining a higher solubility , please warm the tube at 37 °C and shake it in the ultrasonic bath for a while. Stock solution can be stored below -20°C for several months.

Shipping Condition Evaluation sample solution : ship with blue ice All other available size: ship with RT , or blue ice upon request.

Structure



Protocol

Cell experiment [1]:

Caution: Product has not been fully validated for medical applications. For research use only.

Tel: (909) 407-4943 Fax: (626) 353-8530 E-mail: tech@glpbio.com

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Cell lines	HT-29、 T84、 MCF-7 cells
Preparation Method	Three cancer cells lines (HT-29, T84 and MCF-7) were treated with lycopene (1–5 μ M) for 48 and 96 h. Cell viability was monitored using the method of MTT.
Reaction Conditions	1-5 μ M; 48、 96h
Applications	After treatment for 48 h, a significant decrease in the number of viable cells was observed in three cancer cells lines as compared to controls, reaching 30% reduction in HT-29 and T84 cells and 10% in MCF-7 cells.

Animal experiment [2]:

Animal models	Adult male athymic nude mice
Preparation Method	Mice were orally administered with lycopene (1 and 20 mg/kg) or β -carotene (20 mg/kg) in corn oil twice per week for 12 wk. Corn oil alone was given to the noninjected control mice. Two weeks into the supplementation, the mice were injected once with SK-Hep-1 cells into the lateral tail vein and blood samples were drawn once per week from the retro-orbital plexus for the measurement of MMP and VEGF.
Dosage form	1, 20mg/kg; p.o.
Applications	High lycopene supplementation significantly reduced the mean number of tumors and the cross-sectional area of tumors. High lycopene supplementation also decreased the positive rate of proliferating cellular nuclear antigen (PCNA), and protein expressions of PCNA, MMP-9, and VEGF in lung tissues.

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References:

[1] Teodoro A J, Oliveira F L, Martins N B, et al. Effect of lycopene on cell viability and cell cycle progression in human cancer cell lines[J]. Cancer cell international, 2012, 12: 1-9.

[2]Huang C S, Liao J W, Hu M L. Lycopene inhibits experimental metastasis of human hepatoma SK-Hep-1 cells in athymic nude mice[J]. The Journal of nutrition, 2008, 138(3): 538-543.

Background

Lycopene is a fat-soluble carotenoid molecule that is found in high concentrations in red fruits and vegetables and has a strong antioxidant effect [1]. Lycopene can inhibit the activity of HMG-CoA reductase[2]. Lycopene can induce G0/G1 arrest and S phase arrest of the cell cycle [3].

In vitro, Lycopene (1-5 μ M) treatment of HT-29, T84, and MCF-7 cells for 48h significantly reduced the number of viable cells, with a 30% reduction in HT-29 and T84 cells and a 10% reduction in MCF-7 cells, and also caused cell cycle arrest at different stages [4]. Lycopene (0.5-10 μ M) treatment of SK-Hep-1 cells reduced the production of intracellular ROS by inhibiting the NADPH oxidase produced in the PKC pathway [5].

In vivo, oral treatment of mice inoculated with SK-Hep-1 tumor cells with Lycopene (20 mg/kg) for 12 weeks significantly reduced the average number of tumors and tumor cross-sectional area, and also reduced the positive rate of proliferating cell nuclear antigen (PCNA) in lung tissue, as well as the expression of PCNA, MMP-9 and VEGF proteins [6]. Oral treatment of diabetic rats with Lycopene (10 mg/kg) significantly reduced the activity of angiotensin-converting enzyme (ACE) in plasma and heart tissue [7].

References:

[1] Wang Q, Wu X, Zhang J, et al. Role of ROS/JAK2/STAT3 signaling pathway in di-n-butyl phthalate-induced testosterone synthesis inhibition and antagonism of lycopene[J]. Food and Chemical Toxicology, 2023, 175: 113741.

[2] Palozza P, Catalano A, Simone R E, et al. Effect of lycopene and tomato products on cholesterol metabolism[J]. Annals of Nutrition and Metabolism, 2012, 61(2): 126-134.

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- [3] Hwang E S, Bowen P E. Cell cycle arrest and induction of apoptosis by lycopene in LNCaP human prostate cancer cells[J]. Journal of medicinal food, 2004, 7(3): 284-289.
- [4] Teodoro A J, Oliveira F L, Martins N B, et al. Effect of lycopene on cell viability and cell cycle progression in human cancer cell lines[J]. Cancer cell international, 2012, 12: 1-9.
- [5] Bandeira A C B, da Silva T P, de Araujo G R, et al. Lycopene inhibits reactive oxygen species production in SK-Hep-1 cells and attenuates acetaminophen-induced liver injury in C57BL/6 mice[J]. Chemico-Biological Interactions, 2017, 263: 7-17.
- [6] Huang C S, Liao J W, Hu M L. Lycopene inhibits experimental metastasis of human hepatoma SK-Hep-1 cells in athymic nude mice[J]. The Journal of nutrition, 2008, 138(3): 538-543.
- [7] Ozmutlu S, Dede S, Ceylan E. The effect of lycopene treatment on ACE activity in rats with experimental diabetes[J]. Journal of the Renin-Angiotensin-Aldosterone System, 2012, 13(3): 328-333.

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