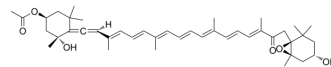


## Fucoxanthin

<b>Cat. No.:</b>	HY-N2302												
<b>CAS No.:</b>	3351-86-8												
<b>Molecular Formula:</b>	C <sub>42</sub> H <sub>58</sub> O <sub>6</sub>												
<b>Molecular Weight:</b>	658.91												
<b>Target:</b>	PPAR; c-Myc; Bacterial; NO Synthase; Caspase; ERK												
<b>Pathway:</b>	Cell Cycle/DNA Damage; Metabolic Enzyme/Protease; Vitamin D Related/Nuclear Receptor; Apoptosis; Anti-infection; Immunology/Inflammation; MAPK/ERK Pathway; Stem Cell/Wnt												
<b>Storage:</b>	<table border="0"> <tr> <td>Powder</td> <td>-20°C</td> <td>3 years</td> </tr> <tr> <td></td> <td>4°C</td> <td>2 years</td> </tr> <tr> <td>In solvent</td> <td>-80°C</td> <td>6 months</td> </tr> <tr> <td></td> <td>-20°C</td> <td>1 month</td> </tr> </table>	Powder	-20°C	3 years		4°C	2 years	In solvent	-80°C	6 months		-20°C	1 month
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	4°C	2 years											
In solvent	-80°C	6 months											
	-20°C	1 month											



### SOLVENT & SOLUBILITY

<b>In Vitro</b>	DMSO : 12.5 mg/mL (18.97 mM; Need ultrasonic)					
		Solvent Concentration	Mass			
	<b>Preparing Stock Solutions</b>			1 mg	5 mg	10 mg
		1 mM		1.5177 mL	7.5883 mL	15.1766 mL
		5 mM		0.3035 mL	1.5177 mL	3.0353 mL
	10 mM		0.1518 mL	0.7588 mL	1.5177 mL	
Please refer to the solubility information to select the appropriate solvent.						
<b>In Vivo</b>	1. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline) Solubility: 1.25 mg/mL (1.90 mM); Suspended solution; Need ultrasonic					

### BIOLOGICAL ACTIVITY

<b>Description</b>	Fucoxanthin (all-trans-Fucoxanthin) is a marine carotenoid and shows anti-obesity, anti-diabetic, anti-oxidant, anti-inflammatory and anticancer activities <sup>[1][2][3][4][5][6][7][8][9]</sup> .			
<b>IC<sub>50</sub> &amp; Target</b>	PPAR <sub>γ</sub>	UCP1	PPAR <sub>α</sub>	iNOS
	Caspase 3	Caspase-8	Caspase 9	SOD
	ERK2			
<b>In Vitro</b>	Fucoxanthin (2.8-6.2 μM, 24 h) shows obvious bacteriostatic effect on all tested Mtb strains, with MIC values of 2.8-4.1 μM <sup>[4]</sup> .			

Fucoxanthin (0-25  $\mu$ M, 24 h) inhibits the proliferation of HeLa and SiHa cervical cancer cell lines and promotes cell stasis in the G0/G1 cell cycle phase<sup>[5]</sup>.

Fucoxanthin (10  $\mu$ M, 12 h) inhibits the cell viability of HTLV-1-infected T cell lines by inducing G1 cell cycle arrest and apoptosis, thereby exhibiting anticancer activity<sup>[7]</sup>.

Fucoxanthin (0-100  $\mu$ g/mL, 24 h) dose-dependent inhibits the expression of TNF- $\alpha$ , PGE2, iNOS and COX-2 proteins in RAW 264.7 cells<sup>[8]</sup>.

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

#### Western Blot Analysis<sup>[8]</sup>

Cell Line:	RAW 264.7 cells
Concentration:	0-100 $\mu$ g/mL,
Incubation Time:	24 h
Result:	Inhibited LPS-induced iNOS and COX-2 protein expression in RAW 264.7 cells. Decreased NO and PEG2 concentrations in LPS-induced RAW 264.7 cells.

#### RT-PCR<sup>[6]</sup>

Cell Line:	Hela and SiHa cells
Concentration:	10 $\mu$ g/mL
Incubation Time:	4 h
Result:	Down-regulated N-myc mRNA expression.

#### In Vivo

Fucoxanthin (10-2000 mg/kg, p.o.) does not cause death or abnormal appearance in ICR mice and rats<sup>[3]</sup>.

Fucoxanthin (10-50 mg/kg/day, p.o.) can protect the cadmium-induced renal injury mouse model by improving the antioxidant capacity of mice<sup>[9]</sup>.

Fucoxanthin (0.1-10 mg/kg, i.v.) shows a dose-dependent anti-ocular inflammatory effect on EIU (endotoxin-induced uveitis) <sup>[8]</sup>.

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

Animal Model:	6-week-old male and female Crl:CD (SD) rats, 6-week-old male and female ICR mice <sup>[3]</sup>
Dosage:	10-2000 mg/kg/day for 28/30 days
Administration:	p.o.
Result:	No abnormal appearance or death occurred in the rats and ICR mice. Significantly increased the concentration of serum total cholesterol in rats and ICR mice.

Animal Model:	mice models subjected to cadmium-induced kidney damage, Six- to eight-week-old male Kunming mice (weight, 22–26 gram (g)/per mouse) <sup>[9]</sup>
Dosage:	10-50 mg/kg/day for 14 days
Administration:	p.o.
Result:	Blocked the Cd-induced increase in the cadmium level. Significantly decreased the levels of blood urea nitrogen, creatinine and lipid peroxidation, and increased the levels of SOD, POD and reduced glutathione. Helped to restore mitochondrial structure and inhibit renal cell apoptosis.

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## CUSTOMER VALIDATION

- Phytomedicine. 2023 Jun 16, 154926.
- Biomed Pharmacother. 2021 Apr 14;139:111590.
- Food Funct. 2023 Oct 6.
- Algal Res. 2022: 102891.
- PLoS One. 2023 Sep 12;18(9):e0291469.

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- [2]. Šudomová M, et al. A Microbiological, Toxicological, and Biochemical Study of the Effects of Fucoxanthin, a Marine Carotenoid, on Mycobacterium tuberculosis and the Enzymes Implicated in Its Cell Wall: A Link Between Mycobacterial Infection and Autoimmune Diseases. Mar Drugs. 2019 Nov 14;17(11):641.
- [3]. Ye G, et al. Fucoxanthin may inhibit cervical cancer cell proliferation via downregulation of HIST1H3D. J Int Med Res. 2020 Oct;48(10):300060520964011.
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- [5]. Ishikawa C, et al. Anti-adult T-cell leukemia effects of brown algae fucoxanthin and its deacetylated product, fucoxanthinol. Int J Cancer. 2008 Dec 1;123(11):2702-12.
- [6]. Shiratori K, et al. Effects of fucoxanthin on lipopolysaccharide-induced inflammation in vitro and in vivo. Exp Eye Res. 2005 Oct;81(4):422-8.
- [7]. Yang H, et al. Role of Fucoxanthin towards Cadmium-induced renal impairment with the antioxidant and anti-lipid peroxide activities. Bioengineered. 2021 Dec;12(1):7235-7247.
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**Caution: Product has not been fully validated for medical applications. For research use only.**

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