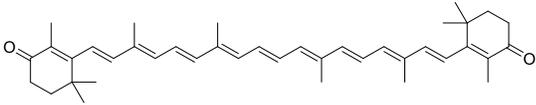


Product data sheet



MedKoo Cat#: 597684 Name: Canthaxanthin CAS#: 514-78-3 Chemical Formula: C ₄₀ H ₅₂ O ₂ Exact Mass: 564.3967 Molecular Weight: 564.85		
Product supplied as:		Powder
Purity (by HPLC):		≥ 98%
Shipping conditions		Ambient temperature
Storage conditions:		Powder: -20°C 3 years; 4°C 2 years. In solvent: -80°C 3 months; -20°C 2 weeks.

1. Product description:

Canthaxanthin is a trans-carotenoid pigment widely distributed in nature. The compound is used as an oral tanning agent and as a food and drug coloring agent. Oral ingestion of the compound causes canthaxanthin retinopathy.

2. CoA, QC data, SDS, and handling instruction

SDS and handling instruction, CoA with copies of QC data (NMR, HPLC and MS analytical spectra) can be downloaded from the product web page under "QC And Documents" section. Note: copies of analytical spectra may not be available if the product is being supplied by MedKoo partners. Whether the product was made by MedKoo or provided by its partners, the quality is 100% guaranteed.

3. Solubility data

Solvent	Max Conc. mg/mL	Max Conc. mM
DMSO	1	1.77

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	1.77 mL	8.85 mL	17.70 mL
5 mM	0.35 mL	1.77 mL	3.54 mL
10 mM	0.18 mL	0.89 mL	1.77 mL
50 mM	0.04 mL	0.18 mL	0.35 mL

5. Molarity Calculator, Reconstitution Calculator, Dilution Calculator

Please refer the product web page under section of "Calculator"

6. Recommended literature which reported protocols for in vitro and in vivo study

In vitro study

1. Huang DS, Odeleye OE, Watson RR. Inhibitory effects of canthaxanthin on in vitro growth of murine tumor cells. *Cancer Lett.* 1992 Aug 31;65(3):209-13. doi: 10.1016/0304-3835(92)90233-1. PMID: 1516035.

2. Esatbeyoglu T, Rimbach G. Canthaxanthin: From molecule to function. *Mol Nutr Food Res.* 2017 Jun;61(6). doi: 10.1002/mnfr.201600469. Epub 2016 Nov 15. PMID: 27687695.

In vivo study

1. Palozza P, Calviello G, Emilia De Leo M, Serini S, Bartoli GM. Canthaxanthin supplementation alters antioxidant enzymes and iron concentration in liver of Balb/c mice. *J Nutr.* 2000 May;130(5):1303-8. doi: 10.1093/jn/130.5.1303. PMID: 10801934.

2. Esatbeyoglu T, Rimbach G. Canthaxanthin: From molecule to function. *Mol Nutr Food Res.* 2017 Jun;61(6). doi: 10.1002/mnfr.201600469. Epub 2016 Nov 15. PMID: 27687695.

7. Bioactivity

Biological target:

Canthaxanthin is a red-orange carotenoid with various biological activities, such as antioxidant, antitumor properties.

Product data sheet



In vitro activity

The antitumorigenic effects of carotenoids, in addition to their immuno-enhancing effects, may occur by their direct action on growing tumor cells. To test this hypothesis the direct inhibitory effect of various concentrations of canthaxanthin (CX; 4,4'-diketo-beta-carotene), a non-provitamin A carotenoid, was tested on the in vitro growth of JB/MS, B16F10 melanomas and PYB6 fibrosarcoma and murine non-transformed NIH-3T3 (ATCC CRL 1658) cells. At concentrations of 1×10^{-8} M up to 1×10^{-4} M, CX significantly reduced the overall number of tumor cells. The greatest inhibition was observed at a CX concentration of 1×10^{-4} M after 72 h and 96 h of incubation. However, CX had no inhibitory effect on the growth of the non-transformed NIH-3T3 cell line; rather it significantly enhanced growth of this cell line (P less than 0.05) after 96 h of incubation. Thus, the inhibitory action of CX on growing tumor cells appears to be due to its direct actions on tumor cells and not via its conversion to vitamin A or its immuno-enhancing effects.

Reference: Cancer Lett. 1992 Aug 31;65(3):209-13. [https://linkinghub.elsevier.com/retrieve/pii/0304-3835\(92\)90233-L](https://linkinghub.elsevier.com/retrieve/pii/0304-3835(92)90233-L)

In vivo activity

The 4,4'-diketo-beta-carotene, canthaxanthin, alters tocopherol status when fed to Balb/c mice, suggesting an involvement of carotenoids in the modulation of oxidative stress in vivo. We investigated further the modifications induced by an oral administration of canthaxanthin on lipid peroxidation, antioxidant enzymes and iron status in liver of Balb/c mice. Female 6-wk-old Balb/c mice were randomly divided into two groups ($n = 10$ /group). The control group (C) received olive oil alone (vehicle) and the canthaxanthin-treated group (Cx) received canthaxanthin at a dose of 14 microg/(g body wt.d). The 15-d canthaxanthin treatment resulted in carotenoid incorporation but did not modify lipid peroxidation as measured by endogenous production of malondialdehyde (MDA). However, glutathione peroxidase activity was 35% lower ($P < 0.01$) and catalase (59%, $P < 0.005$) and manganese superoxide dismutase (MnSOD) (28%, $P < 0.05$) activities were higher in canthaxanthin-treated mice than in controls. Moreover, carotenoid feeding caused a significant ($P < 0.05$) overexpression of the MnSOD gene; mRNA levels of the enzyme were greater in treated mice than in controls. Concomitantly, a 27% ($P < 0.05$) greater iron concentration was found in liver from canthaxanthin-treated mice compared with controls. These findings support the hypothesis that canthaxanthin alters the protective ability of tissues against oxidative stress in vivo.

Reference: J Nutr. 2000 May;130(5):1303-8. <https://academic.oup.com/jn/article-lookup/doi/10.1093/jn/130.5.1303>

Note: The information listed here was extracted from literature. MedKoo has not independently retested and confirmed the accuracy of these methods. Customer should use it just for a reference only.