

## Eicosapentaenoic Acid

## Chemical Properties

CAS No. : 10417-94-4

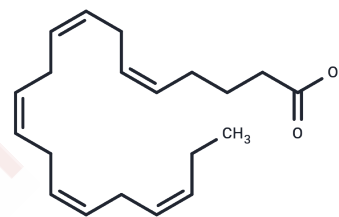
Formula: C<sub>20</sub>H<sub>30</sub>O<sub>2</sub>

Molecular Weight: 302.45

Store at low temperature

Storage: Pure form: -20°C for 3 years | In solvent: -80°C for 1 year

Actual storage temperature shall be subject to the COA.



## Biological Description

Description	Eicosapentaenoic Acid is an $\omega$ -3 fatty acid and an inhibitor of fatty acid synthase (FASN). Eicosapentaenoic Acid promotes DNA demethylation in the reexpression of the tumor suppressor gene CCAAT/ enhancer-binding protein $\delta$ (C/EBP $\delta$ ). Eicosapentaenoic Acid activates the RAS/ERK/C/EBP $\beta$ pathway in U937 leukemia cells through demethylation of the CpG island of H-RAS intron 1. Eicosapentaenoic Acid promotes the relaxation of vascular smooth muscle cells and vasodilation.
Targets(IC50)	Histone Demethylase,Endogenous Metabolite
In vitro	<p><b>METHODS:</b> HepG2 cells were treated with Eicosapentaenoic Acid (0, 0.1, 0.2, 0.3, 0.4, 0.5 mM) for 12 hours, and the inhibitory effect on cell growth was detected by the MTT assay.</p> <p><b>RESULTS:</b> Eicosapentaenoic Acid inhibited the growth of HepG2 cells (IC<sub>50</sub>=50 <math>\mu</math>M). [1]</p> <p><b>METHODS:</b> N2a cells were treated with Eicosapentaenoic Acid (1.5 <math>\mu</math>M-200 <math>\mu</math>M). The fluorescence intensity of fluorescein was measured by 485 nm excitation and 528 nm emission using a microplate reader to quantify the number of viable cells.</p> <p><b>RESULTS:</b> Eicosapentaenoic Acid at 25 <math>\mu</math>M was considered to have no significant effect on cell viability and was used in subsequent cell protection experiments, indicating that its toxicity to cells was relatively low at this concentration. [2]</p>
In vivo	<p><b>METHODS:</b> To study the protective effect of Eicosapentaenoic Acid on the cardiovascular system, a diet rich in Eicosapentaenoic Acid was fed to spontaneously hypertensive rats (SHRs) for 20 weeks.</p> <p><b>RESULTS:</b> Rats in the Eicosapentaenoic Acid diet group showed a reduction in interstitial cardiac fibrosis and an improvement in left ventricular diastolic function, despite persistently elevated blood pressure. The Eicosapentaenoic Acid diet increased the mRNA expression of M2-type macrophage marker Mrc1 and anti-inflammatory cytokine interleukin-10 (IL-10) in cardiac tissue. It indicates that the anti-fibrotic effect of EPA is partially achieved by promoting the polarization of macrophages to the anti-inflammatory M2 type and increasing IL-10. [3]</p> <p><b>METHODS:</b> To study the antiviral efficacy of Eicosapentaenoic Acid, Eicosapentaenoic Acid (10, 50, and 100 mg/kg) was orally administered to C57 mice for 2 consecutive days.</p> <p><b>RESULTS:</b> There was no significant difference in the serum ALT and urine CRE levels of</p>

In vivo	mice in the Eicosapentaenoic Acid administration group compared with the control group, indicating that EPA had no hepatotoxicity or nephrotoxicity to mice at the given dose. HE staining also showed that EPA did not cause tissue damage in the liver and kidney tissues of mice. [4]
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### Solubility Information

Solubility	DMSO: 100 mg/mL (330.63 mM),Sonication is recommended. Ethanol: 50 mg/mL (165.32 mM),Sonication is recommended. (< 1 mg/ml refers to the product slightly soluble or insoluble)
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### Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	3.3063 mL	16.5317 mL	33.0633 mL
5 mM	0.6613 mL	3.3063 mL	6.6127 mL
10 mM	0.3306 mL	1.6532 mL	3.3063 mL
50 mM	0.0661 mL	0.3306 mL	0.6613 mL

Please select the appropriate solvent to prepare the stock solution, according to the solubility of the product in different solvents. Please use it as soon as possible.

Note: The dilution table applies only to solid products. For liquid products, please calculate the stock solution based on the stated concentration and/or density.

### Reference

- Sun Y, et al. Oleic Acid and Eicosapentaenoic Acid Reverse Palmitic Acid-induced Insulin Resistance in Human HepG2 Cells via the Reactive Oxygen Species/JUN Pathway. *Genomics Proteomics Bioinformatics*. 2021 Oct;19(5): 754-771.
- Yamine A, et al. Cytoprotective effects of  $\alpha$ -linolenic acid, eicosapentaenoic acid, docosahexaenoic acid, oleic acid and  $\alpha$ -tocopherol on 7-ketocholesterol - Induced oxiaoptophagy: Major roles of PI3-K / PDK-1 / Akt signaling pathway and glutathione peroxidase activity in cell rescue. *Curr Res Toxicol*. 2024 Feb 8;6:100153.
- Gharraee N, et al. Eicosapentaenoic Acid Ameliorates Cardiac Fibrosis and Tissue Inflammation in Spontaneously Hypertensive Rats. *J Lipid Res*. 2022 Nov;63(11):100292.
- Feng Y, et al. Antiviral activity of eicosapentaenoic acid against zika virus and other enveloped viruses. *Front Pharmacol*. 2025 Apr 4;16:1564504.

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Tel:781-999-4286 E\_mail:info@targetmol.com Address:34 Washington Street,Wellesley Hills,MA 02481