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Lieferung & Zahlungsart

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Gamma-Linolenic acid

Cat. No.: HY-N7140

CAS No.: 506-26-3

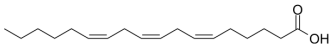
Molecular Formula: $C_{18}H_{30}O_2$

Molecular Weight: 278.43

Target: Endogenous Metabolite; Apoptosis; NF-κB; ERK; JNK

Pathway: Metabolic Enzyme/Protease; Apoptosis; NF-κB; MAPK/ERK Pathway; Stem Cell/Wnt

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

DMSO : 100 mg/mL (359.16 mM; Need ultrasonic)

Preparing Stock Solutions	Mass / Solvent / Concentration	1 mg	5 mg	10 mg
	1 mM	3.5916 mL	17.9578 mL	35.9157 mL
	5 mM	0.7183 mL	3.5916 mL	7.1831 mL
	10 mM	0.3592 mL	1.7958 mL	3.5916 mL

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

In Vivo

1. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 2.5 mg/mL (8.98 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: 2.5 mg/mL (8.98 mM); Suspended solution; Need ultrasonic
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (8.98 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Gamma-linolenic acid (γ-Linolenic acid) is an orally active unsaturated fatty acid. Gamma-linolenic acid exerts anti-inflammatory effects by inhibiting the NF-κB pathway and the phosphorylation of ERK1/2 and JNK. At the same time, it exerts anticancer effects by inducing apoptosis (Apoptosis) in cancer cells. Additionally, Gamma-linolenic acid also has antioxidant and memory-improving effects. It holds promise for research in the fields of inflammation, neurology, and cancer diseases[1][2][3][4][5].

IC_{50} & Target	Human Endogenous Metabolite	ERK1	ERK2

In Vitro

Gamma-linolenic acid (10-100 μM, 24 h) can protect PC12 cells from β-Amyloid (25-35) (HY-P0128)-induced damage by alleviating oxidative stress, restoring cell cycle arrest, and blocking caspase-3 activation in PC12 cells[2].
Gamma-linolenic acid (10-100 μM, 24 h) ameliorates β-Amyloid (25-35) (HY-P0128)-induced neuroinflammation in PC12 cells by inhibiting NF-κB and MAPK signaling pathways[2].
Gamma-linolenic acid (100μM, 2 days) inhibits the proliferation and migration of human and rat GBM cells and induces apoptosis in human and rat GBM cells[3].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Western Blot Analysis[2]

Cell Line:	PC12 cells
Concentration:	10, 25, 50, 100 μM
Incubation Time:	24 h
Result:	Dose-dependently repressed proinflammatory cytokine inductions in β-Amyloid (25-35) (HY-P0128) PC12 cells, that is restraining β-Amyloid (25-35)-induced the production of TNF-α, NO and PGE2 by suppressing iNOS and COX-2 expression. Decreased β-Amyloid (25-35)-induced phosphorylation of ERK1/2 and JNK in a dose-dependent manner.

Cell Viability Assay[2]

Cell Line:	PC12 cells
Concentration:	10, 25, 50, 100 μM
Incubation Time:	24 h
Result:	Protected PC12 cells against β-Amyloid (25-35) (HY-P0128)-induced cell death.

Apoptosis Analysis[2]

Cell Line:	PC12 cells
Concentration:	10, 25, 50, 100 μM
Incubation Time:	24 h
Result:	Apparently decreased apoptosis to 28.86%, 22.63 %, 14.34%, and 6.77% at 10, 25, 50 and 100 μM, respectively (50 μM Aβ25–35 treatment increased the cellular apoptotic rate to 38.16%).

Apoptosis Analysis[3]

Cell Line:	C6 cells (rat glioma) and T98G cells (human glioma)
Concentration:	100 μM
Incubation Time:	2 days
Result:	Significantly increased the proportion of apoptotic cells, which was 44.7% higher compared to the control group.

In Vivo

Gamma-linolenic acid (100 and 150 mg/kg, p.o., once daily for 14 days) exerts anti-inflammatory and antioxidant effects in an indomethacin (HY-14397)-induced gastric ulcer rat model[4].
Gamma-linolenic acid (1 and 5 mg/kg, i.p., once daily for 40 days) improves glycation-induced memory impairment in a D-Fructose (HY-N7092)-induced aging model of Sprague-Dawley rats[5].

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

Animal Model:	Indomethacin (HY-14397)-induced gastric ulcer Wistar rats model (250 - 260 g)
Dosage:	100 and 150 mg/kg
Administration:	Oral gavage(p.o.), once daily for 14 days
Result:	Reduced levels of COX1, TNF-1, IL-6 and ICAM and increased PGE2 levels. Normalised antioxidant function by modulating MDA, SOD, GSH and CAT.

CUSTOMER VALIDATION

- Cancer Cell Int. 2021 Jun 5;21(1):291.
- Eur J Pharmacol. 2023 Feb 23;175618.
- Int J Parasitol Drugs Drug Resist. 2024 Jun 6:25:100551.

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REFERENCES

[1]. Youn K, et al. Gamma-linolenic acid ameliorates Aβ-induced neuroinflammation through NF-κB and MAPK signalling pathways[J]. Journal of Functional Foods, 2018, 42: 30-37.

[2]. Andreoli Miyake J, et al. Gamma-Linolenic acid alters migration, proliferation and apoptosis in human and rat glioblastoma cells. Prostaglandins Other Lipid Mediat. 2020 Oct;150:106452.

[3]. Rahimi K, et al. The protective effects of Gamma-linolenic acid against indomethacin-induced gastric ulcer in rats[J]. British Journal of Nutrition, 2024, 131(11): 1844-1851.

[4]. Khan SA, et al. Gamma-linolenic acid ameliorated glycation-induced memory impairment in rats. Pharm Biol. 2017 Dec;55(1):1817-1823.

[5]. Sergeant S, et al. Gamma-linolenic acid, Dihommo-gamma linolenic, Eicosanoids and Inflammatory Processes. Eur J Pharmacol. 2016 Aug 15;785:77-86.

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