Nervonic acid

Cat. No.: HY-N2526

CAS No.: 506-37-6

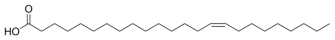
Molecular Formula: $C_{24}H_{46}O_2$

Molecular Weight: 366.62

Target: Endogenous Metabolite; NF-κB

Pathway: Metabolic Enzyme/Protease; NF-κB

Storage: 4°C, protect from light
* In solvent : -80°C, 6 months; -20°C, 1 month (protect from light)



SOLVENT & SOLUBILITY

In Vitro

DMSO : 100 mg/mL (272.76 mM; Need ultrasonic)

Preparing Stock Solutions	Mass / Solvent / Concentration	1 mg	5 mg	10 mg
	1 mM	2.7276 mL	13.6381 mL	27.2762 mL
	5 mM	0.5455 mL	2.7276 mL	5.4552 mL
	10 mM	0.2728 mL	1.3638 mL	2.7276 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: ≥ 1.67 mg/mL (4.56 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 1.67 mg/mL (4.56 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 1.67 mg/mL (4.56 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Nervonic acid is a monounsaturated fatty acid with oral activity. Nervonic acid exerts anti-inflammatory activity by inhibiting NF-κB signaling. Nervonic acid can be used in the study of neurodegenerative diseases[1][2][3].

IC_{50} & Target

Human Endogenous Metabolite

In Vitro

Nervonic acid (0.01 μM, 48 h) can improve the activity of PC-12 cells and play a role as a neuroprotective mediator in the brain[1].

Nervonic acid (12.5, 25, 50 μM, 24 h) can decrease the inflammatory response of RAW264.7 cells induced by LPS and inhibit the activation of key signal pathways related to inflammation[3].

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

Cell Viability Assay[1]

Cell Line:	PC-12
Concentration:	0.001, 0.01, 0.1, 1. 10 μM
Incubation Time:	48 h
Result:	Increased cell viability pretreated with a very low concentration.

Western Blot Analysis[3]

Cell Line:	RAW264.7
Concentration:	12.5, 25, 50 μM
Incubation Time:	24 h
Result:	Decreased the expression of TLR4, JNK, P38 and NF-κB.

In Vivo

Nervonic acid (20, 40, 60 mg/kg, gavage for 7 days) protects the motor system against motor disorders in a PD mouse model [2].

Nervonic acid (5, 50, 100 mg/kg, dissolved in corn oil for 7 days) improves colonic inflammation by inhibiting the NF-κB signaling pathway in DSS-induced colitis mice[3].

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

Animal Model:	MPTP-induced PD mice model[2]
Dosage:	20, 40, 60 mg/kg
Administration:	i.g. for 7 days
Result:	Reversed behavioral deficits inhibited the α-synuclein expression and regulated oxidative stress response.

Animal Model:	DSS-induced colitis mice model[3]
Dosage:	5, 50, 100 mg/kg
Administration:	i.g. for 7 days
Result:	Improved the symptoms of diarrhea, weight loss and fecal occidental blood. Reduced the levels of COX-2 and iNOS.

REFERENCES

[1]. Umemoto H, et al. Protective Effect of Nervonic Acid Against 6-Hydroxydopamine-Induced Oxidative Stress in PC-12 Cells. J Oleo Sci. 2021;70(1):95-102.

[2]. Hu D, et al. Nervonic acid amends motor disorder in a mouse model of Parkinson's disease. Transl Neurosci. 2022 Apr 20;13(1):71.

[3]. Yuan SN, et al. Improved colonic inflammation by nervonic acid via inhibition of NF-κB signaling pathway of DSS-induced colitis mice. Phytomedicine. 2023 Apr;112:154702.

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

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