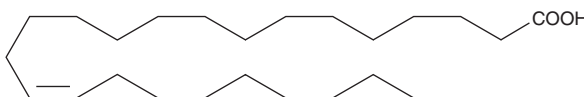


PRODUCT INFORMATION

Nervonic Acid

Item No. 13940

CAS Registry No.: 506-37-6
 Formal Name: 15Z-tetracosenoic acid
 Synonym: Selacholeic Acid
 MF: $C_{24}H_{46}O_2$
 FW: 366.6
 Purity: $\geq 95\%$
 Supplied as: A crystalline solid
 Storage: $-20^{\circ}C$
 Stability: ≥ 2 years



Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Laboratory Procedures

Nervonic acid is supplied as a crystalline solid. A stock solution may be made by dissolving the nervonic acid in the solvent of choice. Nervonic acid is soluble in organic solvents such as ethanol, DMSO, and dimethyl formamide (DMF), which should be purged with an inert gas. The solubility of nervonic acid in ethanol is approximately 10 mg/ml and approximately 20 mg/ml in DMSO and DMF.

Nervonic acid is sparingly soluble in aqueous solutions. To enhance aqueous solubility, dilute the organic solvent solution into aqueous buffers or isotonic saline. If performing biological experiments, ensure the residual amount of organic solvent is insignificant, since organic solvents may have physiological effects at low concentrations. We do not recommend storing the aqueous solution for more than one day.

Description

Nervonic acid (24:1n-9) is a very long chain fatty acid produced by elongation of oleic acid (18:1n-9) (Item No. 90260) and derived from erucic acid (22:1n-9) (Item No. 90175).¹ It is enriched in nervous tissue and is particularly abundant in sphingolipids, such as sphingomyelin in the myelin sheath of nerve fibers.² Nervonic acid is poorly produced in demyelinating disorders, including multiple sclerosis and adrenoleukodystrophy, suggesting that dietary supplementation may be beneficial.³ In addition, it is deficient in mice which are homozygous for the quaking mutation, a model of Parkinson's disease.^{4,5} Nervonic acid also binds and inhibits DNA polymerase β ($K_i = 4.0 \mu M$) and HIV-1 reverse transcriptase ($K_i = 1.2 \mu M$).⁶

References

1. Taylor, D.C., Francis, T., Guo, Y., *et al.* Molecular cloning and characterization of a KCS gene from *Cardamine graeca* and its heterologous expression in Brassica oilseeds to engineer high nervonic acid oils for potential medical and industrial use. *Plant Biotechnol. J.* **7**, 925-938 (2009).
2. Hirvisalo, E.L. and Renkonen, O. Composition of human serum sphingomyelins. *J. Lipid Res.* **11**, 54-59 (1970).
3. Sargent, J.R., Coupland, K., and Wilson, R. Nervonic acid and demyelinating disease. *Med. Hypotheses* **42**, 237-242 (1994).
4. Baumann, N.A., Jacque, C.M., Pollet, S.A., *et al.* Fatty acid and lipid composition of the brain of a myelin deficient mutant, the "quaking" mouse. *Eur. J. Biochem.* **4**, 340-344 (1968).
5. Cook, C., Barnett, J., Coupland, K., *et al.* Effects of feeding Lunaria oil rich in nervonic and erucic acids on the fatty acid compositions of sphingomyelins from erythrocytes, liver, and brain of the quaking mouse mutant. *Lipids* **33**(10), 993-1000 (1998).
6. Kasai, N., Mizushina, Y., Sugawara, F., *et al.* Three-dimensional structural model analysis of the binding site of an inhibitor, nervonic acid, of both DNA polymerase β and HIV-1 reverse transcriptase. *J. Biochem.* **132**, 819-828 (2002).

WARNING

THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

SAFETY DATA

This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the complete Safety Data Sheet, which has been sent via email to your institution.

WARRANTY AND LIMITATION OF REMEDY

Buyer agrees to purchase the material subject to Cayman's Terms and Conditions. Complete Terms and Conditions including Warranty and Limitation of Liability information can be found on our website.

Copyright Cayman Chemical Company, 06/01/2021

CAYMAN CHEMICAL

1180 EAST ELLSWORTH RD
 ANN ARBOR, MI 48108 · USA

PHONE: [800] 364-9897
 [734] 971-3335

FAX: [734] 971-3640

CUSTSERV@CAYMANCHEM.COM
 WWW.CAYMANCHEM.COM