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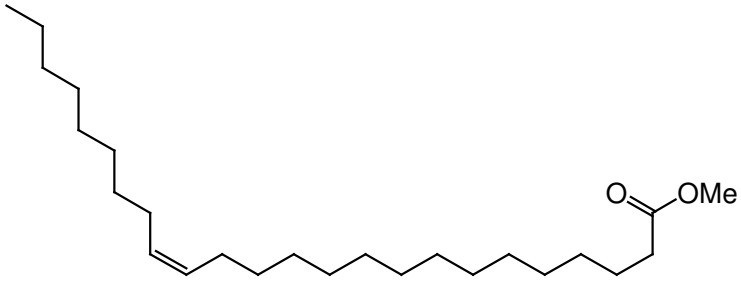
PRODUCT DATA SHEET

Methyl tetracosenoate (*cis*-15)

Catalog number: 1156
Common name: Methyl nervonate; C24:1 (*cis*-15) Methyl ester
Source: synthetic
Solubility: chloroform, hexane, ethyl ether
CAS number: 2733-88-2

Molecular Formula: $C_{25}H_{48}O_2$
Molecular Weight: 381
Storage: -20°C
Purity: TLC: 99%, GC: 99%
TLC System: hexane/ethyl ether (85:15)
Appearance: liquid



Application Notes:

This high purity *omega*-9 very long-chain fatty acid methyl ester is ideal as a standard and for biological studies. Nervonic acid is a fatty acid that is found in significant amounts in nerve tissue where it has many critical roles and by which it derives its name. Nervonic acid is very important in the biosynthesis of the nerve cell myelin and, together with lignoceric acid, it makes up 60% of the fatty acids acylated to the sphingomyelin of white matter. Amounts of nervonic acid acylated to sphingolipids, such as sphingomyelin, are highly decreased in demyelinating diseases such as adrenoleukodystrophy and multiple sclerosis[1] and supplements rich in this fatty acid have been used to help treat these demyelination disorders. In chronic kidney disease nervonic acid has been demonstrated to be a marker for mortality.[2] In addition to being prevalent in nerve cells nervonic acid is also present in significant quantities acylated to the sphingomyelin of red blood cells and can be used as an index of maturation of premature infants.[3] The phospholipid fatty acid composition of children with attention-deficit hyperactive disorder showed significantly lower concentrations of nervonic acid, along with other fatty acids, as compared with controls.[4] Nervonic acid has been demonstrated to be an inhibitor of both DNA polymerase *beta* and of human immunodeficiency virus type-1 reverse transcriptase, although it is inhibited non-competitively.[5] In addition to having vital roles in nerve cells nervonic acid is also an important component of plant lipids where it can be found in significant amounts in their oils.

Selected References:

1. J. Sargent, K. Coupland, and R. Wilson "Nervonic acid and demyelinating disease" *Medical Hypotheses*, vol. 42 pp. 237-242, *1994*
2. G. Shearer et al. "Plasma Fatty Acids in Chronic Kidney Disease: Nervonic Acid Predicts Mortality" *J Ren Nutr.* (*2011*) doi:10.1053/j.jrn.2011.05.005
3. F. Babin et al. "Nervonic acid in red blood cell sphingomyelin in premature infants: An index of myelin maturation?" *Lipids*, vol. 28 pp. 627-630, *1993*
4. J. Chen et al. "Dietary patterns and blood fatty acid composition in children with attention-deficit hyperactivity disorder in Taiwan" *The Journal of Nutritional Biochemistry*, vol. 15 pp. 467-472, *2004*
5. N. Kasai et al. "Three-Dimensional Structural Model Analysis of the Binding Site of an Inhibitor, Nervonic Acid, of Both DNA Polymerase *beta* and HIV-1 Reverse Transcriptase" *J. Biochem*, vol. 132 pp. 819-828, *2002*