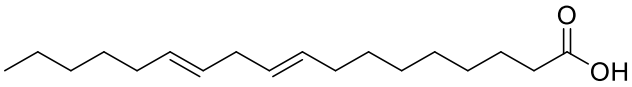
PRODUCT DATA SHEET

Octadecadienoic acid (all *trans*-9,12)

Catalog number: 1151
Synonyms: Linoelaidic acid (all *trans*-9,12); C18:2 (all *trans*-9,12) Fatty acid;
Source: semisynthetic, plant
Solubility: chloroform, hexane, ethyl ether
CAS number: 506-21-8
Molecular Formula: $C_{18}H_{32}O_2$

Molecular Weight: 280
Storage : -20°C
Purity: TLC: 99%, GC >99%
TLC System: hexane/ethyl ether/acetic acid (85:15:1 by vol.)
Appearance: liquid



Application Notes:

This product is a high purity linoelaidic acid that is ideal as a standard and for biological systems. The process of producing partially hydrogenated fats converts the *cis* double bonds of linoleic acid into *trans* double bonds and the resulting linoelaidic acid can comprise a significant percentage of the unsaturated fatty acids in some partially hydrogenated fats. *trans*-Fatty acids have become widely studied due to the link between these fatty acids and coronary heart disease. Whereas some *trans* isomers of linoleic acid are metabolized or converted to other polyunsaturated fatty acids, linoelaidic acid appears not to undergo such processes. Although linoelaidic acid is incorporated into triacylglycerols as readily as linoleic acid it is discriminated against in cholesterol esters.[1] At high temperatures, such as are used in cooking and frying, the triacylglycerols of linoelaidic acid are easily converted to other isomers of linoleic acid and conjugated linoleic acid.[2] Some *cis*-unsaturated fatty acids are activators for protein kinase C (PKC) and most of their corresponding *trans*-isomers have greatly reduced activating properties; however, linoelaidic acid demonstrates approximately the same degree of activation of PKC as its natural linoleic isomer.[3] Linoelaidic acid (as well as *trans* elaidic acid) induce apoptosis through its effect on Caspase-3 activity and on intracellular reactive oxygen species production and may play a role in causing damage and death of vascular endothelial cells in atherosclerosis.[4]

Selected References:

1. A. Lanser et al. "Metabolism of Linoleate versus Linoelaidate in the Laying Hen" *Lipids*, vol. 13 pp. 103-109, *1978*
2. A. Christy "Thermally Induced Isomerization of Trilinolein and Trilinoelaidin at 250 _C: Analysis of Products by Gas Chromatography and Infrared Spectroscopy" *Lipids*, vol. 44 pp. 1105-1112, *2009*
3. H.-H. Lo et al. "*In vitro* activation of mouse skin protein kinase C by fatty acids and their hydroxylated metabolites" *Lipids*, vol. 29 pp. 547-553, *1994*
4. D. Zapolska-Downar et al. "*Trans* Fatty Acids Induce Apoptosis in Human Endothelial Cells" *Journal of Physiology and Pharmacology*, vol. 56 pp. 611-625, *2005*

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