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ProductInformation

Linoleic acid

Product Number **L1376**
Storage Temperature -20 °C

Product Description
Molecular Formula: $C_{18}H_{32}O_2$
Molecular Weight: 280.5
CAS Number: 60-33-3
Melting Point: -9 to -8 °C[1]

Linoleic acid is an essential fatty acid.[2] Linoleic acid is a metabolic precursor for arachidonic acid synthesis.[1] Linoleic acid is also a major component of many plant seed oils.[3] Plant derived oils are a good source for this fatty acid.[2,3]

Linoleic acid will oxidize in air forming a hard glossy surface.[1] A rapid method for determining the oxidation of fatty acids, including linoleic, eicosapentaenoic, and docosahexaenoic acids has been discussed.[4]

Lipid oxidation, mechanisms, products, and biological significance for fatty acids, including linolenic acid, linoleic acid, and oleic acid, have been discussed.[5]

Precautions and Disclaimer
For Laboratory Use Only. Not for drug, household or other uses.

Preparation Instructions
Linoleic acid is insoluble in water, and completely miscible in ethanol, ether, and chloroform.[1]

A stock solution (30 mM) dissolved in 1% TWEEN® 20 in water and diluted in 0.1 M sodium phosphate buffer, pH 7.0, can be prepared.[6]

Storage/Stability
Polyunsaturated fatty acids (such as linoleic acid) autooxidize by three competing pathways.[8] After formation of a peroxy radical, the following can occur:
1) abstraction of hydrogen atoms to give hydroperoxide products,
2) beta-scission of the carbon-oxygen bond to give back carbon radicals, including isomerized carbon radicals,
3) cyclizing to give a cyclic peroxy radical.

Other publications have discussed lipid oxidation.[5,9]

A method to remove traces of hydroperoxides and other conjugated lipid impurities commonly present in commercial samples is discussed.[7] Removal of the impurities from oleic and linoleic acids was done by anaerobic low temperature crystallization from acetonitrile.

Procedure
A methyl ester of linoleic acid for GC analysis can be prepared by the following procedure:
A) Mix 25 mg of linoleic acid and 1 ml of Boron Trifluoride-Methanol derivatizing agent (Product No. B 1252).
B) Seal in a 15 ml screw top culture tube, put in a 100 °C oven for approximately 7 minutes, and cool to room temperature.
C) Add 1 ml of hexane and fill the culture tube with saturated sodium chloride (about 12-13 ml).
D) Shake the solution well. A centrifugation step using a benchtop centrifuge can speed up the phase separation into aqueous and hexane layers. The methyl ester derivative will be in the upper hexane layer and the derivatizing agent will be left in the sodium chloride solution.

References
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9. Kim, R.S., et al., Comparison of analytical methods for monitoring autoxidation profiles of authentic lipids.J. Lipid Res., **28**, 1110-1117 (1987).

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