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ProductInformation

Arachidonic acid sodium salt

Product Number **A8798**
Storage Temperature -0 °C

Product Description

Molecular Formula: $C_{20}H_{31}O_2Na$
Molecular Weight: 326.5
CAS Number: 6610-25-9

Sodium arachidonate is a white to off-white waxy solid.

Polyunsaturated fatty acids (such as arachidonic acid) autooxidize by three competing pathways.[1] 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.

A procedure for determination of the amount of oxidation in a lipid by way of the oxidation index has been published.[2] The oxidation index is a ratio of the absorbance at 233 nm to the absorbance at 215 nm. The latter wavelength was chosen since there is little contribution of the fatty acid carbonyl to the absorbance at this wavelength, allowing Beer's Law to be followed.

Other useful references describe lipid oxidation[3] and analytical methods to monitor oxidation.[4]

Precautions and Disclaimer

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

Preparation Instructions

Sodium arachidonate is soluble in water (5 mg/ml). It is also soluble in ethanol (50 mg/ml) and methanol (200 mg/ml).

Storage/Stability

If the sealed ampule of sodium arachidonate is unopened, the product should be stable at room temperature. The ampules are purged with argon and vacuum sealed when the product is packaged. This method of packaging results in no change in appearance or purity (capillary GC) of the product when stored at 37 °C over a period of 2 weeks. The sodium salt of arachidonic acid is very sensitive to oxidation and will turn yellow and deteriorate rapidly in air. Once opened, the product must be used quickly or transferred to an inert atmosphere (dry argon) as soon as possible.

The stability of an aqueous solution of this product is very poor with oxidation of the double bonds. Aqueous solutions of arachidonic acid should be used within 12 hours. Although aqueous solutions may be stable for more than 12 hours, it is recommended to make fresh preparations each day. Purging solutions with an inert gas will prolong stability.

References

1. Fox, J., Fatty acids' spontaneous oxidation clarified. Chemical and Engineering News, 18-19 (1981).
2. Klein, R. A., The detection of oxidation in liposome preparations. Biochim. Biophys. Acta., **210(3)**, 486-489 (1970).
3. Frankel, E. N., Lipid oxidation: mechanisms, products and biological significance. J. Am. Oil Chem. Soc., **61(12)**, 1908-1917 (1984).
4. Kim, R. S. and LaBella, F. S., Comparison of analytical methods for monitoring autooxidation profiles of authentic lipids. J. Lipid Res., **28(9)**, 1110-1117 (1987).

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