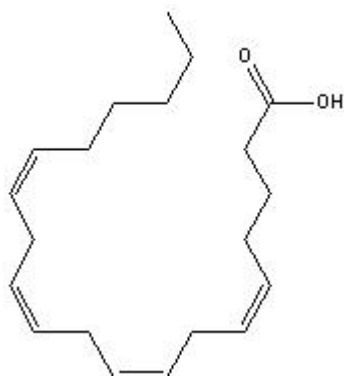


TECHNICAL INFORMATION

Catalog Number: 150384, 194625

Arachidonic Acid

Structure:



Molecular Formula: C₂₀H₃₂O₂

Molecular Weight: 304.47

CAS # 506-32-1

Synonym: (all-Z)-5,8,11,14-Eicosatetraenoic acid

Physical Description: Liquid

Description: An essential fatty acid, and a precursor in the biosynthesis of prostaglandins, thromboxanes, and leukotrienes. Occurs in liver, brain, glandular organs, and depot fats of animals, in small amounts in human depot fats, and is a constituent of animal phosphatides.

Arachidonic acid plays a key role in cellular regulation and is controlled through multiple interconnected pathways. Changes in arachidonic acid levels correspond to the synthesis of eicosanoids resulting from receptor-stimulated lipid hydrolysis.¹

Purity of arachidonic acid: Not less than 99%

Recommended Storage: -0°C (left in the ethanol solution)

Solubility: If ethanol is undesirable, arachidonic acid may be dissolved in acetonitrile, DMF, or DMSO. Simply evaporate the ethanol under a gentle stream of nitrogen (be certain not to evaporate the material to dryness) and redissolve the arachidonic acid in the solvent of choice.

Just prior to use, make dilutions of the stock solution into aqueous buffer or isotonic saline to bring the arachidonic acid to the desired concentration. Ensure that the residual amount of organic solvent is insignificant, since organic solvents may have physiologic effects at low concentrations. A control using the solvent in the absence of the prostaglandin will address this potential variable. We do not recommend storing the aqueous solution for more than one day.

It is difficult to obtain aqueous solutions of arachidonic acid directly. However, an organic solvent free solution of arachidonic acid can be prepared using concentrated basic buffers (pH > 8.0 and ionic strength not less than 0.1 M). Add 400 ul of cold buffer (0°C) per mg of arachidonic acid and agitate vigorously and/or ultrasonicate.

References:

- Burgoyne, R.D. and Morgan, A., "The control of free arachidonic acid levels." *Trends Biochem. Sci.*, **v. 15**: 365-366 (1990).
- *Merck Index*, **12th ed.**, Number 803.
- Mowry et al., *J. Biol. Chem.*, **v. 142**, 679 (1942).
- Arcus, Smedley-Maclean, *Biochem. J.*, **v. 37**, 1 (1943).
- Brown, *J. Biol. Chem.*, **v. 80**, 455 (1928).
- Ault, Brown, *ibid.*, **v. 107**, 615 (1934).
- Shinowara, Brown, *ibid.*, **v. 134**, 331 (1940).
- Dolby et al., *Biochem. J.*, **v. 34**, 1422 (1940).
- Goldberg, Rachlin, U.S. pat. 2,934,570 (1960 to Hoffmann-La Roche)
- Rachlin et al., *J. Org. Chem.*, **v. 26**, 2688 (1961).
- Osbond, Wickens, *Chem. Ind. (London)* 1959, 1288
- Ege et al., *J. Am. Chem. Soc.*, **v. 83**, 3080 (1961).
- K. S. Markley, *Fatty Acids, Part I* (Interscience, New York, 2nd ed., 1960) pp 164-167, 398-400.
- T. K. Schaaf, *Ann. Rep. Med. Chem.*, **v. 12**, 182-190 (1977).
- B. B. Weksler, *N. Engl. Soc. Allergy Proc.*, **v. 2**, 56-61 (1981).
- N. A. Nelson et al., *Chem. Eng. News*, **v. 60**, 30-44 (Aug. 16, 1982).
- *Drugs*, **v. 33**, Suppl. 1, 2-66 (1987).

