

Product Information



Leukotriene A₄ methyl ester

Item No. 20010

CAS Registry No: 73466-12-3

Formal Name: 5S-*trans*-5,6-oxido-7E,9E,11Z,14Z-eicosatetraenoic acid, methyl ester

Synonym: LTA₄ methyl ester

MF: C₂₁H₃₂O₃

FW: 332.5

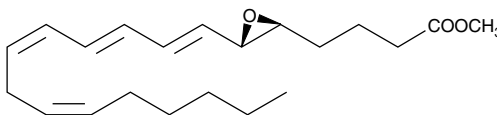
Purity: ≥97%

Stability: ≥1 year at -80°C

Supplied as: A solution in hexane/1% triethylamine

UV/Vis: λ_{max}: 279 nm ε: 49,000

Miscellaneous: Light Sensitive



Laboratory Procedures

For long term storage, we suggest that leukotriene A₄ methyl ester (LTA₄ methyl ester) be stored as supplied at -80°C. It should be stable for at least one year.

LTA₄ methyl ester is supplied as a solution in hexane containing 1% triethylamine. The naturally occurring free acid of LTA₄ is too unstable for storage. The methyl ester is provided because of its increased stability. However, both the free acid and the methyl ester decompose rapidly under acidic conditions. Before performing any biological experiments, LTA₄ methyl ester should be hydrolyzed to LTA₄. Alkaline hydrolysis of LTA₄ methyl ester can be performed as follows:

Prepare a hydrolysis solution consisting of degassed acetone (8 ml) and 0.25 M NaOH (2 ml) and cool it to 0°C. Evaporate the hexane solution of LTA₄ methyl ester just to dryness under nitrogen and immediately add 4 ml of the hydrolysis solution per 1 mg of LTA₄ methyl ester (e.g., 400 ml per 100 mg vial). Allow the reaction to stand under an inert atmosphere of nitrogen or argon at 22°C for 40 minutes. The resulting basic solution of LTA₄ will be stable for about 60 minutes at room temperature or for 12 hours at 0°C. Dilutions of this LTA₄ stock solution can be made directly into aqueous buffers. Incorporation of albumin in the buffers will increase the stability of LTA₄ in aqueous media.¹ Solutions not used within 12 hours of hydrolysis should be discarded.

LTA₄ is synthesized in mast cells, eosinophils, and neutrophils from arachidonic acid by 5-lipoxygenase, which exhibits both lipoxygenase and LTA₄ synthase activities.^{2,3} LTA₄ is rapidly metabolized by LTA₄ hydrolase or LTC₄ synthase to LTB₄ or LTC₄, respectively.³ LTA₄ from leukocytes is known to undergo transcellular metabolism in platelets, erythrocytes, and endothelial cells.⁴ Further metabolism of LTA₄ by 15-lipoxygenase leads to lipoxin biosynthesis.³ LTA₄ as a free acid is highly unstable. The methyl ester is stable and can be readily hydrolyzed to the free acid as needed.

References

1. Manganaro, F., Gaudette, Y., Pombo-Gentile, A., *et al.* Purification and characterization of leukotriene A₄ epoxide hydrolase from dog lung. *Prostaglandins* **36**, 859-874 (1988).
2. Shimizu, T., Rådmark, O., and Samuelsson, B. Enzyme with dual lipoxygenase activities catalyzes leukotriene A₄ synthesis from arachidonic acid. *Proc. Nat. Acad. Sci USA* **81**, 689-693 (1984).
3. Samuelsson, B., Dahlén, S.-E., Lindgren, J.Å., *et al.* Leukotrienes and lipoxins: Structures, biosynthesis, and biological effects. *Science* **237**, 1171-1176 (1987).
4. Maclouf, J.A. and Murphy, R.C. Transcellular metabolism of neutrophil-derived leukotriene A₄ by human platelets. A potential cellular source of leukotriene C₄. *J. Biol. Chem.* **263**, 174-181 (1988).

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