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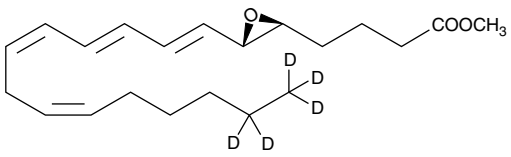
Product Information

Leukotriene A_4-d_5 methyl ester

Item No. 10006197

Formal Name: 5S-*trans*-5,6-oxido-7E,9E,11Z,14Z-eicosatetraenoic-19,19,20,20, and 20-d_5 acid, methyl ester
Synonym: LTA_4-d_5 methyl ester
MF: $C_{21}H_{27}D_5O_3$
FW: 337.5
Chemical Purity: ≥97% Leukotriene A_4
Deuterium Incorporation: ≥99% deuterated forms (d_1-d_5); ≤1% d_0
Stability: ≥1 year at -80°C
Supplied as: A solution in hexane containing 1% triethylamine
UV/Vis.: λ_{max}: 279 nm ε: 49,000
Miscellaneous: Light Sensitive



Laboratory Procedures

Leukotriene A_4-d_5 methyl ester (LTA_4-d_5 methyl ester) contains five deuterium atoms at the 19, 19', 20, 20, and 20 positions. It is intended for use as an internal standard for the quantification of LTA_4 methyl ester by GC- or LC-mass spectrometry (MS). For long term storage, we suggest that LTA_4-d_5 methyl ester be stored as supplied at -80°C. It should be stable for at least one year.

LTA_4-d_5 methyl ester is supplied as a solution in hexane containing 1% triethylamine. To change the solvent, simply evaporate the hexane under a gentle stream of nitrogen and immediately add the solvent of choice. Solvents such as ethanol, DMSO, and dimethyl formamide purged with an inert gas can be used. The solubility of LTA_4-d_5 methyl ester in these solvents is approximately 50 µg/ml. The naturally occurring free acid of LTA_4-d_5 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. To perform MS analysis of LTA_4-d_5, the methyl ester must be hydrolyzed. Alkaline hydrolysis of LTA_4-d_5 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-d_5 methyl ester just to dryness under nitrogen and immediately add 100 µl of the hydrolysis solution per 25 µg of LTA_4-d_5 methyl ester. Allow the reaction to stand under an inert atmosphere of nitrogen or argon at 22°C for 40 mintues. The resulting basic solution of LAT4-d_5 will be stable for about 60 minutes at room temperature or 12 hours at 0°C. Solutions used within 12 hours of hydrolysis should be discarded.

LTA_4-d_5 methyl ester is used as an internal standard for the quantification of LTA_4 methyl ester by stable isotope dilution MS. The accuracy of the sample weight in this vial is between 5% over and 2% under the amount shown on the vial. If better precision is required, the deuterated standard should be quantitated against a more precisely weighed unlabeled standard by constructing a standard curve of peak intensity ratios (deuterated *versus* unlabeled).

LTA_4 is synthesized in mast cells, eosinophils, and neutrophils from arachidonic acid by 5-lipoxygenase (5-LO), which exhibits both LO and LTA_4 synthase activities.[1,2] LTA_4 is rapidly metabolized by LTA_4 hydrolase or LTC_4 synthase to LTB_4 or LTC_4, respectively.[2] LTA_4, from leukocytes, is known to undergo transcellular metabolism in platelets, erythrocytes, and endothelial cells.[3] Further metabolism of LTA_4 by 15-LO leads to lipoxin biosynthesis.[2] LTA_4 as a free acid is highly unstable. The methyl ester is stable and can be readily hydrolyzed to the free acid as needed.

References

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2. Shimizu, T., Rådmark, O., and Samuelsson, B. *Proc. Nat. Acad. Sci USA* **81**, 689-693 (1984).
3. Samuelsson, B., Dahlén, S.-E., Lindgren, J.Å., *et al. Science* **237**, 1171-1176 (1987).
4. Maclouf, J.A. and Murphy, R.C. *J. Biol. Chem.* **263**, 174-181 (1988).

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