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SZABO-SCANDIC HandelsgmbH

Quellenstraße 110, A-1100 Wien

T. +43(0)1 489 3961-0

F. +43(0)1 489 3961-7

mail@szabo-scandic.com

www.szabo-scandic.com

[linkedin.com/company/szaboscandic](https://www.linkedin.com/company/szaboscandic) 

Product Information



Leukotriene A₄-d₅ methyl ester

Item No. 10006197

Formal Name: 5S-*trans*-5,6-oxido-7E,9E,11Z,14Z-eicosatetraenoic-19,19,20,20, and 20-d₅ acid, methyl ester

Synonym: LTA₄-d₅ methyl ester

MF: C₂₁H₂₇D₅O₃

FW: 337.5

Chemical Purity: ≥97% Leukotriene A₄

Deuterium

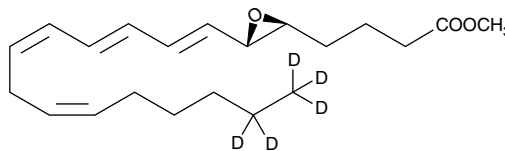
Incorporation: ≥99% deuterated forms (d₁-d₅); ≤1% d₀

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 A₄-d₅ methyl ester (LTA₄-d₅ 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 LTA₄ methyl ester by GC- or LC-mass spectrometry (MS). For long term storage, we suggest that LTA₄-d₅ methyl ester be stored as supplied at -80°C. It should be stable for at least one year.

LTA₄-d₅ 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 LTA₄-d₅ methyl ester in these solvents is approximately 50 µg/ml. The naturally occurring free acid of LTA₄-d₅ 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 LTA₄-d₅, the methyl ester must be hydrolyzed. Alkaline hydrolysis of LTA₄-d₅ 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-d₅ methyl ester just to dryness under nitrogen and immediately add 100 µl of the hydrolysis solution per 25 µg of LTA₄-d₅ methyl ester. 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-d₅ 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.

LTA₄-d₅ methyl ester is used as an internal standard for the quantification of LTA₄ 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).

LTA₄ is synthesized in mast cells, eosinophils, and neutrophils from arachidonic acid by 5-lipoxygenase (5-LO), which exhibits both LO and LTA₄ synthase activities.^{1,2} LTA₄ is rapidly metabolized by LTA₄ hydrolase or LTC₄ synthase to LTB₄ or LTC₄, respectively.² LTA₄, from leukocytes, is known to undergo transcellular metabolism in platelets, erythrocytes, and endothelial cells.³ Further metabolism of LTA₄ by 15-LO leads to lipoxin biosynthesis.² 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.* *Prostaglandins* **36**, 859-874 (1988).
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. Macclouf, J.A. and Murphy, R.C. *J. Biol. Chem.* **263**, 174-181 (1988).

Related Products

For a list of related products please visit: www.caymanchem.com/catalog/10006197

WARNING: THIS PRODUCT IS FOR LABORATORY RESEARCH ONLY; NOT FOR ADMINISTRATION TO HUMANS. NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

MATERIAL SAFETY DATA

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Cayman Chemical

Mailing address

1180 E. Ellsworth Road
Ann Arbor, MI
48108 USA

Phone

(800) 364-9897
(734) 971-3335

Fax

(734) 971-3640

E-Mail

custserv@caymanchem.com

Web

www.caymanchem.com