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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



CEP-Lysine-d₄

Item No. 9000595

Formal Name: (S)-2-amino-6-(2-(2-carboxy-ethyl)-1H-pyrrol-1-yl)-hexanoic-2,2',3,3'-d₄-acid

MF: C₁₃H₁₆D₄N₂O₄

FW: 272.3

Chemical Purity: ≥98%

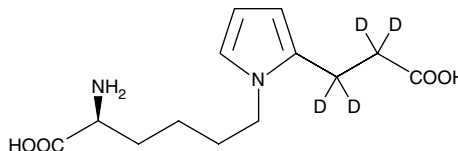
Deuterium

Incorporation: ≥99% deuterated forms (d₁-d₄); ≤1% d₀

Stability: ≥2 years at -20°C

Supplied as: A crystalline solid

UV/Vis.: λ_{max}: 217 nm



Laboratory Procedures

CEP-Lysine-d₄ contains four deuterium atoms at the hydroxyethyl 2, 2', 3, and 3' positions. It is intended for use as an internal standard for the quantification of CEP-lysine by GC- or LC-mass spectrometry (MS). For long term storage, we suggest that CEP-lysine-d₄ be stored as supplied at -20°C. It should be stable for at least two years.

CEP-Lysine-d₄ is supplied as a crystalline solid. A stock solution may be made by dissolving the CEP-Lysine-d₄ in the solvent of choice. CEP-Lysine-d₄ is soluble in organic solvents such as DMSO and dimethyl formamide, which should be purged with an inert gas. The solubility of CEP-lysine-d₄ in these solvents is approximately 20 mg/ml.

CEP-Lysine-d₄ is used as an internal standard for the quantification of CEP-lysine 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).

Docosahexaenoic acid (DHA) is an ω-3 polyunsaturated fatty acid that is abundant in the brain and in photoreceptor cell membranes in the retina. Oxidative cleavage of phospholipids containing DHA produces reactive electrophilic phospholipid fragments, including 4-hydroxy-7-oxohept-5-enoates.¹ These can interact with the primary amine group of lysyl residues to produce 2-(ω-carboxyethyl)pyrrole (CEP) derivatives, which are abundant in certain diseases.^{2,3} Advanced glycation end products, including CEP-lysine are biomarkers for age-related macular degeneration.^{4,5}

References

1. Lu, L., Gu, X., Hong, L., *et al.* Synthesis and structural characterization of carboxyethylpyrrole-modified proteins: Mediators of age-related macular degeneration. *Bioorg. Med. Chem.* **17**, 7548-7561 (2009).
2. Gu, X., Sun, M., Gugiu, B., *et al.* Oxidatively truncated docosahexaenoate phospholipids: Total synthesis, generation, and peptide adduction chemistry. *J. Org. Chem.* **68**, 3749-3761 (2003).
3. Crabb, J.W., Miyagi, M., Gu, X., *et al.* Drusen proteome analysis: An approach to the etiology of age-related macular degeneration. *Proc. Natl. Acad. Sci. USA* **99**(23), 14682-14687 (2002).
4. Gu, J., Pauer, G.J.T., Yue, X., *et al.* Assessing susceptibility to age-related macular degeneration with proteomic and genomic biomarkers. *Mol. Cell. Proteomics* **8**, 1338-1349 (2009).
5. Ni, J., Yuan, X., Gu, J., *et al.* Plasma protein pentosidine and carboxymethyllysine, biomarkers for age-related macular degeneration. *Mol. Cell. Proteomics* **8**, 1921-1933 (2009).

Related Products

For a list of related products please visit: www.caymanchem.com/catalog/9000595

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

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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