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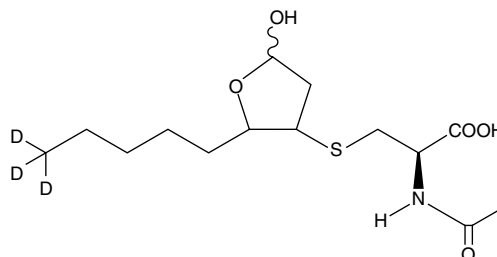
Product Information



4-hydroxy Nonenal Mercapturic Acid-d₃

Item No. 9000348

Formal Name: N-acetyl-S-(tetrahydro-5-hydroxy-2-pentyl-3-furanyl)-L-cysteine-11,11,11-d₃
MF: C₁₄H₂₂D₃NO₅S
FW: 322.4
Chemical Purity: ≥98% 4-hydroxy nonenal mercapturic acid
Deuterium Incorporation: ≥99% deuterated forms (d₁-d₃); ≤1% d₀
Stability: ≥1 year at -80°C
Supplied as: A solution in ethanol



Laboratory Procedures

4-hydroxy Nonenal mercapturic acid-d₃ contains three deuterium atoms at the terminal methyl position. It is intended for use as an internal standard for the quantification of 4-hydroxy nonenal mercapturic acid by GC- or LC-mass spectrometry (MS). For long term storage, we suggest that 4-hydroxy nonenal mercapturic acid-d₃ be stored as supplied at -80°C. It should be stable for at least one year.

4-hydroxy Nonenal mercapturic acid-d₃ is supplied as a solution in ethanol. To change the solvent, simply evaporate the ethanol under a gentle stream of nitrogen and immediately add the solvent of choice. Solvents such as DMSO and dimethyl formamide purged with an inert gas can be used. The solubility of 4-hydroxy nonenal mercapturic acid-d₃ in these solvents is approximately 50 mg/ml.

4-hydroxy Nonenal mercapturic acid-d₃ is used as an internal standard for the quantification of 4-hydroxy nonenal mercapturic acid 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).

Peroxidation of polyunsaturated fatty acids in circulating lipid particles and membrane phospholipids leads to transient fatty acid hydroperoxides.¹ Several non-enzymatic routes of decomposition are available to these lipid hydroperoxides, including a β-cleavage reaction which breaks the carbon-carbon bond next to the hydroperoxide and produces alkenals, including 4-hydroxy nonenal (4-HNE). Common ω-6 fatty acids such as linoleic acid, dihomo-γ-linolenic acid, and arachidonic acid can give rise to 4-HNE. 4-HNE is cleared rapidly from the plasma and undergoes enterohepatic circulation as a glutathione conjugate in the rat.² About two thirds of an administered dose of 4-HNE is excreted within 48 hours in the urine, primarily in the form of mercapturic acid conjugates.³ The C-1 aldehyde of 4-HNE is reduced to an alcohol in about half of these metabolites. The remainder are C-1 aldehydes or have been oxidized to C-1 carboxylic acids. These aldehydes and carboxylic acids can also form γ-lactols and γ-lactones, respectively, producing at least four or five end urinary metabolites of 4-HNE *in vivo*.

References

1. Pryor, W.A. and Porter, N.A. Suggested mechanisms for the production of 4-hydroxy-2-nonenal from the autoxidation of polyunsaturated fatty acids. *Free Radic. Biol. Med.* **8**, 541-543 (1990).
2. Laurent, A., Alary, J., Debrauwer, L., *et al.* Analysis in the rat of 4-hydroxynonenal metabolites excreted in bile: Evidence of enterohepatic circulation of these byproducts of lipid peroxidation. *Chem. Res. Toxicol.* **12**, 887-894 (1999).
3. Alary, J., Bravais, F., Cravedi, J.-P., *et al.* Mercapturic acid conjugates as urinary end metabolites of the lipid peroxidation product 4-hydroxy-2-nonenal in the rat. *Chem. Res. Toxicol.* **8**, 34-39 (1995).

Related Products

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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

This material should be considered hazardous until information to the contrary becomes available. Do not ingest, swallow, or inhale. Do not get in eyes, on skin, or on clothing. Wash thoroughly after handling. This information contains some, but not all, of the information required for the safe and proper use of this material. Before use, the user must review the complete Material Safety Data Sheet, which has been sent *via* email to your institution.

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