

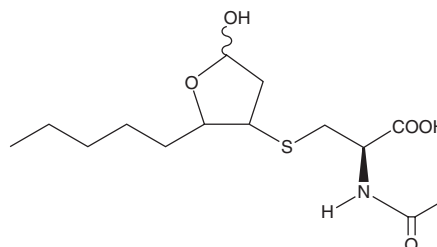
Product Information



4-hydroxy Nonenal Mercapturic Acid

Item No. 32110

CAS Registry No.: 146764-24-1
Formal Name: N-acetyl-S-(tetrahydro-5-hydroxy-2-pentyl-3-furanyl)-L-cysteine
MF: C₁₄H₂₅NO₅S
FW: 319.4
Purity: ≥98%
Stability: ≥1 year at -20°C
Supplied as: A solution in ethanol



Laboratory Procedures

For long term storage, we suggest that 4-hydroxy nonenal mercapturic acid be stored as supplied at -20°C. It should be stable for at least one year.

4-hydroxy Nonenal mercapturic acid 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 in these solvents is approximately 50 mg/ml.

Further dilutions of the stock solution into aqueous buffers or isotonic saline should be made prior to performing biological experiments. Ensure that the residual amount of organic solvent is insignificant, since organic solvents may have physiological effects at low concentrations. If an organic solvent-free solution of 4-hydroxy nonenal mercapturic acid is needed, it can be prepared by evaporating the ethanol and directly dissolving the neat oil in aqueous buffers. The solubility of 4-hydroxy nonenal mercapturic acid in PBS (pH 7.2) is approximately 100 µg/ml. We do not recommend storing the aqueous solution for more than one day.

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 4 or 5 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

4-hydroxy Hexenal - Item No. 32060 • 4-hydroxy Nonenal - Item No. 32100 • 4-hydroxy Nonenal - Item No. 9000876

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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