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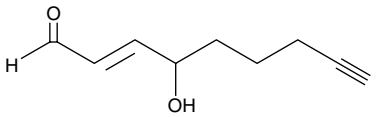
Product Information

4-hydroxy Nonenal Alkyne

Item No. 13265

CAS Registry No.: 1011268-23-7
Formal Name: 4-hydroxy-2E-nonen-8-ynal
Synonym: Click Tag™ 4-HNE Alkyne
MF: $C_9H_{12}O_2$
FW: 152.2
Purity: ≥98%
Stability: ≥6 months at -80°C
Supplied as: A solution in methyl acetate



Laboratory Procedures

For long term storage, we suggest that 4-hydroxy nonenal alkyne (4-HNE alkyne) be stored as supplied at -80°C. It should be stable for at least six months.

4-HNE alkyne is supplied as a solution in methyl acetate. To change the solvent, simply evaporate the methyl acetate 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 4-HNE alkyne in these solvents is approximately 12.5, 2, and 2.5 mg/ml, respectively.

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-HNE alkyne is needed, it can be prepared by evaporating the methyl acetate and directly dissolving the neat oil in aqueous buffers. The solubility of 4-HNE alkyne in PBS, pH 7.2, is approximately 5 mg/ml. We do not recommend storing the aqueous solution for more than one day.

4-hydroxy Nonenal (4-HNE) is a major aldehyde produced during the lipid peroxidation of ω-6 polyunsaturated fatty acids, such as arachidonic acid and linoleic acid.[1,2] It is considered a potential causal agent in numerous diseases, including chronic inflammation, neurodegenerative diseases, atherosclerosis, diabetes, and cancer, in part because it covalently modifies DNA and proteins resulting in genetic mutations and altered cell signaling, respectively.[3] 4-HNE alkyne is a form of 4-HNE with a terminal alkyne. Such terminal alkyne groups can be used in linking reactions, known as click chemistry, characterized by high dependability and specificity of azide-alkyne bioconjugation reactions.[4,5] Click chemistry has only recently been applied to the study of oxidized lipids.[6]

References

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2. Esterbauer, H., Schaur, R.J., and Zoliner, H. Chemistry and biochemistry of 4-hydroxynonenal, malonaldehyde, and related aldehydes. *Free Radic. Biol. Med.* **11**, 81-128 (1991).
3. West, J.D. and Marnett, L.J. Endogenous reactive intermediates as modulators of cell signaling and cell death. *Chem. Res. Toxicol.* **19(2)**, 173-194 (2006).
4. Kolb, H.C. and Sharpless, K.B. The growing impact of click chemistry on drug discovery. *Drug Discov. Today* **8(24)**, 1128-1137 (2003).
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6. Vila, A., Tallman, K.A., Jacobs, A.T., *et al.* Identification of protein targets of 4-hydroxynonenal using click chemistry for *ex vivo* biotinylation of azido and alkynyl derivatives. *Chem. Res. Toxicol.* **21(2)**, 432-444 (2008).

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