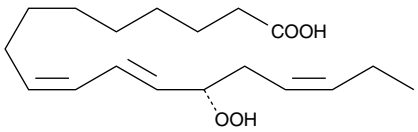
Product Information

13(S)-HpOTrE

Item No. 45220

CAS Registry No.: 67597-26-6
Formal Name: 13S-hydroperoxy-9Z,11E,15Z-octadecatrienoic acid
MF: $C_{18}H_{30}O_4$
FW: 310.4
Purity: ≥98%
Stability: ≥1 year at -80°C
Supplied as: A solution in ethanol
UV/Vis: λ_{max}: 235 nm ε: 23,000



Laboratory Procedures

For long term storage, we suggest that 13(S)-HpOTrE be stored as supplied at -80°C. It should be stable for at least one year.

13(S)-HpOTrE is supplied as a solution in ethanol. To change the solvent, evaporate the ethanol under a gentle stream of nitrogen and immediately add the solvent of choice. Solvents such as DMSO or dimethyl formamide purged with an inert gas can be used. The solubility of 13(S)-HpOTrE 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 13(S)-HpOTrE is needed, the ethanol can be evaporated under a stream of nitrogen and the neat oil dissolved in the buffer of choice. The solubility of 13(S)-HpOTrE in PBS (pH 7.2) is approximately 1 mg/ml. More concentrated aqueous solutions of 13(S)-HpOTrE can be prepared using concentrated basic buffers (pH ≥8.0 and ionic strength ≥0.1 M). Add 400 µl of cold buffer (0˚C) per mg of 13(S)-HpOTrE and vortex vigorously until completely dissolved. Store aqueous solutions of 13(S)-HpOTrE on ice and use within twelve hours.

13(S)-HpOTrE is a hydroperoxy fatty acid derivative of α-linolenic acid. 13(S)-HpOTrE is a monohydroperoxy polyunsaturated fatty acid produced in soybeans by the action of soybean lipoxygenase 2 (LO-2) on esterified linolenic acid.[1] Incubation of soybean seedling biomembranes with soybean LO-2 catalyzes the formation of both 9- and 13-HpOTrE in a molar ratio of 10:1.[1] In plants, 13(S)-HpOTrE can be metabolized by the hydroperoxide lyase pathway producing aldehyde and oxoacid fragments, or by the hydroperoxide dehydratase pathway producing jasmonic acid.[2-4] Treatment of tomato leaves with 13-HpOTrE causes induction of proteinase inhibitors, simulating the normal response to wounding.[5] This data suggests that in plants 13(S)-HpOTrE may participate in a lipid-based signaling system initiated by insect and pathogen attack.

References

1. Maccarrone, M., van Aarle, P.G.M., Veldink, G.A., *et al. In vitro* oxygenation of soybean biomembranes by lipoxygenase-2. *Biochim. Biophys. Acta* **1190**, 164-169 (1994).
2. Vick, B.A. Oxygenated fatty acids of the lipoxygenase pathway, Chapter 5, *in* Lipid Metabolism in Plants. Moore, T.S., Jr., editor. *CRC Press, Boca Raton,* 167-191 (1993).
3. Salch, Y.P., Grove, M.J., Takamura, H., *et al.* Characterization of a C-5,13-cleaving enzyme of 13(S)-hydroperoxide of linolenic acid by soybean seed. *Plant Physiol.* **108**, 1211-1218 (1995).
4. Simpson, T.D. and Garnder, H.W. Allene oxide synthase and allene oxide cyclase, enzymes of the jasmonic acid pathway, localized in Glycine max tissues. *Plant Physiol.* **108**, 199-202 (1995).
5. Farmer, E.E. and Ryan, C.A. Octadecanoid precursors of jasmonic acid activate the synthesis of wound-inducible proteinase inhibitors. *Plant Cell* **4**, 129-134 (1992).

Related Products

9(S)-HpOTrE - Item No. 45120 • 13(S)-HpOTrE(γ) - Item No. 45210 • 12-oxo Phytodienoic Acid - Item No. 88520 • *trans*-12-oxo Phytodienoic Acid - Item No. 88525 • α-Linolenic Acid - Item No. 90210 • α-Linolenic Acid-d_{14} - Item No. 9000433

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