PRODUCT INFORMATION

9-Nitrooleate
Item No. 10008042

CAS Registry No.: 875685-44-2
Formal Name: 9-nitro-9E-octadecenoic acid
Synonyms: 9-Nitrooleic Acid,
9-nitro-9-*trans*-Octadecenoic Acid
MF: $C_{18}H_{33}NO_4$
FW: 327.5
Purity: ≥98%
UV/Vis.: λ_{max}: 255 nm
Supplied as: A solution in ethanol
Storage: -20°C
Stability: ≥1 year

Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Laboratory Procedures

9-Nitrooleate is supplied as a solution in ethanol. To change the solvent, simply evaporate the 9-nitrooleate 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 9-nitrooleate in these solvents is approximately 1 mg/ml.

Description

Nitrated unsaturated fatty acids, such as 10- and 12-nitrolinoleate (LNO_2; Item No. 10037), cholesteryl nitrolinoleate, and nitrohydroxylinoleate, represent a new class of endogenous lipid-derived signalling molecules. LNO_2 isomers serve as potent endogenous ligands for PPARγ and can also decompose or be metabolized to release nitric oxide.[1-4] 9-Nitrooleate is one of two regioisomers of nitrooleate, the other being 10-nitrooleate (Item No. 10008043) (OA-NO_2; used for the mixture of isomers), which are formed by nitration of oleic acid in approximately equal proportions *in vivo*.[5] Peroxynitrite, acidified nitrite, and myeloperoxidase in the presence of H_2O_2 and nitrite, all mediate the nitration of oleic acid. OA-NO_2 is found in human plasma as the free acid and esterified in phospholipids at concentrations of 619 ± 52 nM and 302 ± 369 nM, respectively. OA-NO_2 activates PPARγ approximately 7-fold at a concentration of 1 μM and effectively promotes the differentiation of 3T3-L1 preadiopcytes to adipocytes at 3 μM.[5]

References

1. Lim, D.G., Sweeney, S., Bloodsworth, A., *et al.* Nitrolinoleate, a nitric oxide-derived mediator of cell function: Synthesis, characterization, and vasomotor activity. *Proc. Natl. Acad. Sci. USA* **99(25)**, 15941-15946 (2002).
2. Schopfer, F.J., Lin, Y., Baker, P.R.S., *et al.* Nitrolinoleic acid: An endogenous peroxisome proliferator-activated receptor γ ligand. *Proc. Natl. Acad. Sci. USA* **102(7)**, 2340-2345 (2005).
3. Lima, E.S., Bonini, M.G., Augusto, O., *et al.* Nitrated lipids decompose to nitric oxide and lipid radicals and cause vasorelaxation. *Free Radic. Biol. Med.* **39(4)**, 532-539 (2005).
4. Baker, P.R.S., Schopfer, F.J., Sweeney, S., *et al.* Red cell membrane and plasma linoleic acid nitration products: Synthesis, clinical identification, and quantitation. *Proc. Natl. Acad. Sci. USA* **101(32)**, 11577-11582 (2004).
5. Baker, P.R., Lin, Y., Schopfer, F.J., *et al.* Fatty acid transduction of nitric oxide signaling. Multiple nitrated unsaturated acid derivatives exist in human blood and urine serve as endogenous peroxisome proliferator-activated receptor ligands. *J. Biol. Chem.* **280(51)**, 42464-42475 (2005).

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