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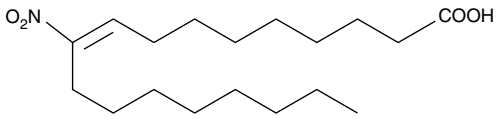
Product Information

10-Nitrooleate

Item No. 10008043

CAS Registry No.:	875685-46-4
Formal Name:	10-nitro-9E-octadecenoic acid
Synonyms:	10-Nitrooleic Acid, 10-nitro-9-*trans*-Octadecenoic Acid
MF:	$C_{18}H_{33}NO_4$
FW:	327.5
Purity:	≥98%
Stability:	≥1 year at -20°C
Supplied as:	A solution in ethanol
UV/Vis.:	λ_{max}: 255 nm



Laboratory Procedures

For long term storage, we suggest that 10-nitrooleate be stored as supplied at -20°C. It should be stable for at least one year.

10-Nitrooleate 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 10-nitrooleate in these solvents is approximately 1 mg/ml. We do not recommend storing the aqueous solution for more than one day.

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] 10-Nitrooleate is one of two regioisomers of nitrooleate, the other being 9-nitrooleate (Item No. 10008042) (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 differentiation 3T3-L1 preadipocytes 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**, 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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