

PRODUCT DATA SHEET

3-Hydroxyoctanoic acid

Catalog number: 1745

Common names: 3-Hydroxy C8:0 fatty acid; 3-Hydroxy caprylic acid

Source: synthetic

Solubility: chloroform, ethanol, methanol

CAS number: 14292-27-4

Molecular Formula: C₈H₁₆O₃

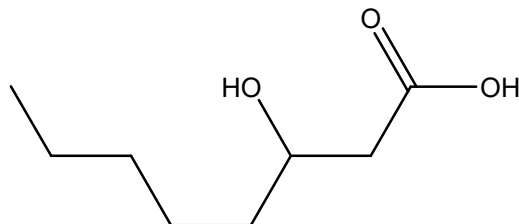
Molecular Weight: 160

Storage: -20°C

Purity: TLC >98%, GC >98%; identity confirmed by MS

TLC System: hexane/ethyl ether/acetic acid (70:30:2)

Appearance: solid



Application Notes:

This 3-hydroxyoctanoic acid is a high purity standard that is ideal for analysis and biological systems. 3-Hydroxyoctanoic acid is found primarily as polyhydroxyalkenoates in bacteria and other microorganisms where they can be as much as 90% of the dry weight in some circumstances. 3-Hydroxy fatty acids are intermediates in fatty acid biosynthesis and have been found to be converted to the *omega*-fatty acid by the enzyme CYP4F11 and then into dicarboxylic acids *in vivo*.¹ 3-Hydroxy fatty acids are used as biomarkers for fatty acid oxidative disorders of both the long- and short-chain 3-hydroxy-acyl-CoA dehydrogenases.^{2,3} Polyhydroxyalkenoates, polyesters produced by bacteria fermentation, are used for carbon and energy storage and are of interest in studies regarding their synthesis, properties and mechanisms and are used as biodegradable plastics.⁴ Medium chain-length polyhydroxyalkenoate monomers such as 3-hydroxyoctanoic acid may have pharmaceutical properties. 3-Hydroxyoctanoic acid is a *beta*-oxidation intermediate in humans and it demonstrates anti-lipolytic activity in adipocytes.⁵

Selected References:

1. M. Dhar et al. "Omega oxidation of 3-hydroxy fatty acids by the human CYP4F gene subfamily enzyme CYP4F11" *Journal of Lipid Research*, vol. 49, pp. 612-624, 2008
2. P. Jones et al. "Improved Stable Isotope Dilution-Gas Chromatography-Mass Spectrometry Method for Serum or Plasma Free 3-Hydroxy-Fatty Acids and Its Utility for the Study of Disorders of Mitochondrial Fatty Acid *beta*-Oxidation" *Clinical Chemistry*, vol. 46, pp. 149-155, 2000
3. P. Jones et al. "Accumulation of free 3-hydroxy fatty acids in the culture media of fibroblasts from patients deficient in long-chain 1-3-hydroxyacyl-CoA dehydrogenase: a useful diagnostic aid" *Clinical Chemistry*, vol. 47(7) pp. 1190-1194, 2001
4. J. Gangoiiti et al. "Production of Chiral (*R*)-3-Hydroxyoctanoic Acid Monomers, Catalyzed by *Pseudomonas fluorescens* GK13 Poly(3-Hydroxyoctanoic Acid) Depolymerase" *Applied and Environmental Microbiology*, vol. 76 pp. 3554-3560, 2010
5. K. Ahmed et al. "Deorphanization of GPR109B as a Receptor for the *beta*-Oxidation Intermediate 3-OH-octanoic Acid and Its Role in the Regulation of Lipolysis" *J. Biol. Chem.*, vol. 284 pp. 21928-21933, 2009

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