

PRODUCT DATA SHEET

2-Hydroxydodecanoic acid

Catalog number: 1701

Synonyms: 2-Hydroxy C12:0 fatty acid;
alpha-Hydroxydodecanoic acid

Source: synthetic

Solubility: methanol, chloroform

CAS number: 2984-55-6

Molecular Formula: C₁₂H₂₄O₃

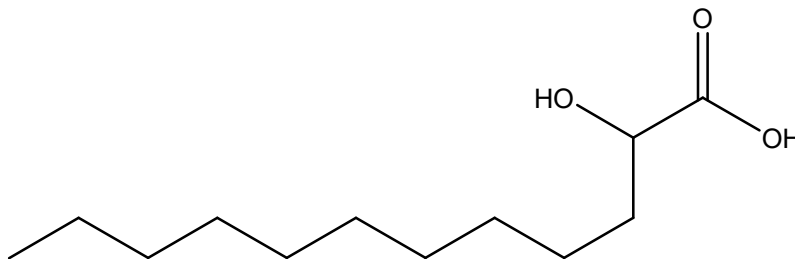
Molecular Weight: 216

Storage: -20°C

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

TLC System: hexane/ethyl ether/acetic acid (70:30:5)

Appearance: solid



Application Notes:

This product is a high purity 2-hydroxy fatty acid that is ideal as a standard and for biological systems. *alpha*-Hydroxy fatty acids are abundant in nervous tissues and are components of cerebrosides and sulfatides, which are mostly found in the myelin of nervous tissues. They are common in cosmetics, skin creams, and lotions. 2-hydroxy acids display complex monolayer phase behavior due to the additional hydrogen bonding afforded by the presence of the second hydroxy group and therefore play an important role in the membrane structure.¹ 2-hydroxydodecanoic acid demonstrates antifungal properties, although to a lesser extent than 3-hydroxy fatty acids.² 2-Hydroxydodecanoic acid (along with 2-hydroxytetradecanoic acid) induced a hyphal growth response of the arbuscular mycorrhizal fungus, *Gigaspora gigantean* while other 2-hydroxy, 3-hydroxy, and non-hydroxy fatty acids did not. This indicates that 2-hydroxy fatty acids are a putative category of root exudate signal perceived by *Gigaspora* species, stimulating an increase in elongated lateral branches.³ *alpha*-Oxidation of 2-hydroxy fatty acids to CO₂ and saturated acids occurs in the peroxisome and is unique from the *alpha*-oxidation of *beta*-carbon branched fatty acids such as phytanic acid. Cells from Zellweger syndrome and peroxisome-deficient cells are unable to undergo *alpha*-oxidation although patients with other peroxisomal disorders such as X-linked adrenoleukodystrophy, Refsum disease, and rhizomelic chondrodysplasia punctata are able to.⁴

Selected References:

1. C. Lendrum et al. "Nonequilibrium 2-Hydroxyoctadecanoic Acid Monolayers: Effect of Electrolytes" *Langmuir*, vol. 27 pp. 4430-4438, 2011
2. J. Sjogren et al. "Antifungal 3-Hydroxy Fatty Acids from *Lactobacillus plantarum* MiLAB 14" *Applied and Environmental Microbiology*, vol. 69 pp. 7554-7557, 2003
3. G. Nagahashi and D. Douds Jr. "The effects of hydroxy fatty acids on the hyphal branching of germinated spores of AM fungi" *Fungal Biology*, vol. 115 pp. 351-358, 2011
4. R. Sandhir, M. Khan, and I. Singh "Identification of the Pathway of *alpha*-Oxidation of Cerebronic Acid in Peroxisomes" *Lipids*, Vol. 35(10) pp. 1127-1133, 2000

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