

PRODUCT DATA SHEET

2-Hydroxytetradecanoic acid

Catalog number: 1703

Synonyms: 2-Hydroxy C14:0 fatty acid;
alpha-Hydroxytetradecanoic acid

Source: synthetic

Solubility: methanol, chloroform

CAS number: 2507-55-3

Molecular Formula: C₁₄H₂₈O₃

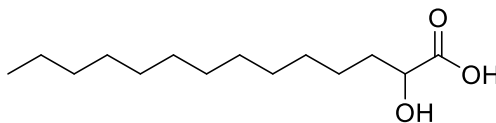
Molecular Weight: 244

Storage: -20°C

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

TLC System: hexane/ethyl ether/acetic acid
(75:25:2 by vol.)

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 and skin creams and lotions. 2-Hydroxytetradecanoic acid is formed by the oxidation of tetradecanoic acid by the enzyme fatty acid 2-hydroxylase. This enzyme is also responsible for the formation of 2-hydroxy galactolipids in the peripheral nervous system.¹ 2-Hydroxytetradecanoic acid can form 2-hydroxymyristoyl-CoA which is a potent inhibitor of myristoyl-CoA:protein N-myristoyltransferase, the enzyme that catalyzes protein N-myristoylation, and can be used to reduce the amount of p56lck (a protein-tyrosine kinases) at the plasma membrane.² 2-Hydroxytetradecanoic acid, but not other 2-hydroxy acids or any 3-hydroxy acids, was found to stimulate an increase in elongated lateral branches of some fungi.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.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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