

PRODUCT DATA SHEET

Methyl-2-hydroxyhexadecanoate

Catalog number: 1706

Synonyms: 2-Hydroxy C16:0 methyl ester;
Methyl *alpha*-
hydroxyhexadecanoate

Source: synthetic

Solubility: methanol, chloroform, ethyl ether

CAS number: 16742-51-1

Molecular Formula: C₁₇H₃₄O₃

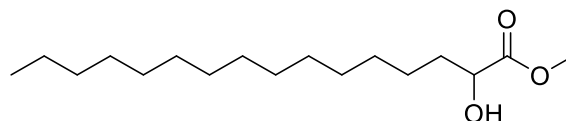
Molecular Weight: 286

Storage: -20°C

Purity: TLC: >98%, GC: >98%

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

Appearance: solid



Application Notes:

2-Hydroxy fatty acids are abundant in nervous tissues and are components of cerebroside and sulfatide, 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-Hydroxyhexadecanoic acid is formed by the oxidation of hexadecanoic 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.² *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.³ Fumonisin B1, a sphingolipid-like toxin found in molds, enhances the accumulation of sphingolipids and 2-hydroxy fatty acids while decreasing the amount of trihydroxy fatty acids.⁴

Selected References:

1. C. Lendrum et al. "Nonequilibrium 2-Hydroxyoctadecanoic Acid Monolayers: Effect of Electrolytes" *Langmuir*, vol. 27 pp. 4430-4438, 2011
2. E. Maldonado et al. "FA2H is responsible for the formation of 2-hydroxy galactolipids in peripheral nervous system myelin" *Journal of Lipid Research*, Vol. 49 pp. 153-161, 2008
3. 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
4. T. Kaneshiro et al. "2-Hydroxyhexadecanoic and 8,9,13-trihydroxydocosanoic acid accumulation by yeasts treated with fumonisin B1" *Lipids*, vol. 28 pp. 397-401, 1993

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