

## PRODUCT DATA SHEET

### Methyl 2-hydroxytetradecanoate

**Catalog number:** 1704

**Common Name:** 2-Hydroxy C14:0 methyl ester

**Source:** synthetic

**Solubility:** methanol, chloroform, ethyl ether

**CAS number:** 56009-40-6

**Molecular Formula:** C<sub>15</sub>H<sub>30</sub>O<sub>3</sub>

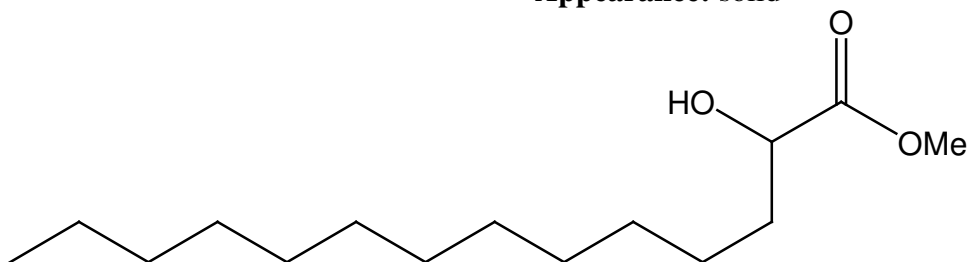
**Molecular Weight:** 258

**Storage:** -20°C

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

**TLC System:** hexane/ethyl ether, (80:20)

**Appearance:** solid



### **Application Notes:**

*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.<sup>1</sup> 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.<sup>2</sup> 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.<sup>3</sup> *alpha*-Oxidation of 2-hydroxy fatty acids to CO<sub>2</sub> 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.<sup>4</sup> 2-Hydroxy fatty acids are undergoing much research and various methods of analysis are being investigated.

### **Selected References:**

1. 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
2. M. Nadler et al. "Treatment of T cells with 2-hydroxymyristic acid inhibits the myristoylation and alters the stability of p56lck" *Biochemistry*, vol. 32 pp. 9250-9255, 1993
3. G. Nagahashi and D. Douds "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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