

PRODUCT DATA SHEET

L-threo-Dihydrosphingosine (Safingol)

Catalog number: 1807; 1807-025

Common Name: L-threo-Sphinganine, C18 chain

Source: synthetic

Solubility: chloroform, methanol, ethanol,
DMSO

CAS number: 15639-50-6

Molecular Formula: C₁₈H₃₉NO₂

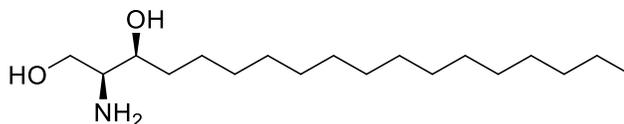
Molecular Weight: 301

Storage: -20°C

Purity: TLC: >98%, GC: >99%

TLC System: chloroform/methanol/DI water/
ammonium hydroxide (70:20:1:1
by vol.)

Appearance: solid



Application Notes:

Safingol is a fully saturated, nonnatural analogue of sphingosine that has anticancer properties and is being investigated for its potential as an antitumor therapy. It has been shown to inhibit both protein kinase C (PKC) and sphingosine kinase. Safingol competitively interacts at the regulatory phorbol-binding domain of PKC, which is a kinase involved in tumorigenesis. Safingol has been shown to potentiate the effect of doxorubicin (DOX) in tumor-bearing animals.¹ It has been reported that safingol is able to increase the activity of DOX and other chemotherapeutic agents, including mitomycin C, by generating the pro-apoptotic second messenger ceramide, even in tumor cell lines that were resistant to chemotherapy due to mutations.² However, a study has recently claimed that safingol induces cell death of an exclusively autophagic character and lacking any of the hallmarks of apoptosis.³ Safingol inhibited the reactive oxygen intermediates (ROI) released from isolated neutrophils and phorbol ester-induced edema and neutrophil influx. Safingol also demonstrates anti-inflammatory activity. Safingol, like the natural sphinganine, is used as a biosynthetic precursor for all complex sphingolipids although the metabolism of the natural and the nonnatural compounds are different.⁴

Selected References:

1. Darges, et al. "Inhibition of leukotriene B4 (LTB4) in human neutrophils by L-threo-dihydrosphingosine" *Adv. Exp. Med. Biol.*, Vol. 400A pp. 387-392, 1997
2. G. Schwartz, et al. "A pilot clinical/pharmacological study of the protein kinase C-specific inhibitor safingol alone and in combination with doxorubicin" *Clin. Cancer Res.*, Vol. 3 pp. 537-543, 1997
3. J. Coward et al. "Safingol (L-threo-sphinganine) induces autophagy in solid tumor cells through inhibition of PKC and the PI3-kinase pathway" *Autophagy* Vol. 5(2) pp.184-193, 2009
4. M. Dragusin et al. "Metabolism of the unnatural anticancer lipid safingol, L-threo-dihydrosphingosine, in cultured cells" Vol. 44 pp. 1772, 2003

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