

## PRODUCT DATA SHEET

### D,L-threo-PPMP

**Catalog No:** 1720

**Common Name:** D,L-threo-1-Phenyl-2-hexadecanoylamino-3-morpholino-1-propanol • HCl

**Source:** synthetic

**Solubility:** alcohols, chloroform

**CAS No:** 149022-18-4

**Molecular Formula:** C<sub>29</sub>H<sub>50</sub>N<sub>2</sub>O<sub>3</sub> • HCl

**Molecular Weight:** 511

**Storage:** -20°C

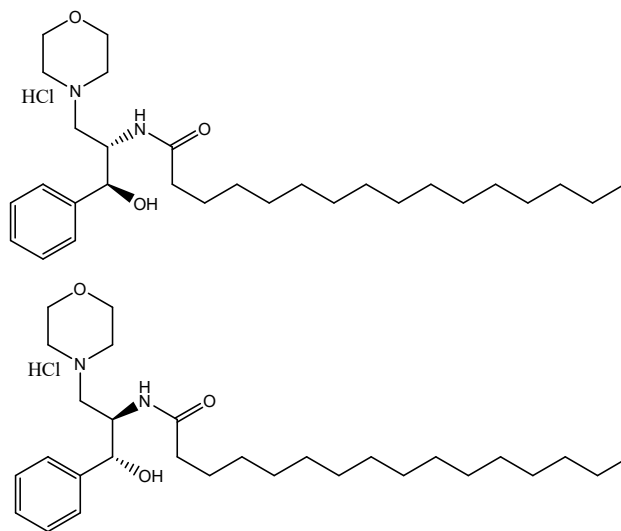
**Purity:** TLC, HPLC > 98%; identity confirmed by MS

**TLC System:** chloroform/methanol/acetic acid (90:10:10 by vol.)

**Appearance:** solid

### **Application Notes:**

This product is a glucosylceramide synthase inhibitor, an enzyme that is essential for the synthesis of a very large number of different glycolipids that are found in many organisms. PPMP has four possible isomers due to its two chiral centers (*D-threo*, *L-threo*, *D-erythro*, and *L-erythro*). Due to PPMP's ability to inhibit the joining of ceramides with carbohydrates there can be an accumulation of ceramide in the cells and this can lead to apoptosis. This process has been suggested as a treatment for cancer since the addition of agents that retard ceramide glucosylation, such as PPMP, have been shown to increase cytotoxicity in tumor cells.<sup>1</sup> Cells that were incubated with PPMP have been shown to have a 50% decrease in the viral fusion of HIV-1, causing a reduction in the penetration of this virus into these cells.<sup>2</sup> PPMP has been used to arrest the growth of the malarial causing parasite *Plasmodium falciparum* by inhibiting its very specific glucosylceramide synthase, an approach that has great potential for malarial chemotherapy.<sup>3</sup> In addition to its stereochemistry, the acyl chain of PPMP has a very marked effect on the intensity of the inhibitory action of the molecule. Conduritol *beta* epoxide (CBE), an inhibitor of *beta*-glucosidase, and PPMP, an inhibitor of glucosylceramide synthase, can be used to create a model of Gaucher disease.<sup>4</sup>



### **Selected References:**

1. B. Maurer et al. "Synergistic Cytotoxicity in Solid Tumor Cell Lines Between *N*-(4-Hydroxyphenyl)retinamide and Modulators of Ceramide Metabolism" *Journal of the National Cancer Institute*, Vol. 92(23) pp. 1897-1909, 2000
2. A. Puri et al. "Human Erythrocyte Glycolipids Promote HIV-1 Envelope Glycoprotein-Mediated Fusion of CD4<sup>+</sup> Cells" *Biochemical and Biophysical Research Communications*, Vol. 242 pp. 219-225, 1998
3. A. Couto et al. "Glycosphingolipids in *Plasmodium falciparum*: Presence of an active glucosylceramide synthase" *European Journal of Biochemistry*, Vol. 271 pp. 2204-2214, 2004
4. D. Sillance et al. "Glucosylceramide modulates membrane traffic along the endocytic pathway" *Journal of Lipid Research*, Vol. 43 pp. 1837-1845, 2002

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