

Product Data Sheet

Product Name: Tetradecyl Phosphonate

Cat. No.: GC17617

Chemical Properties

Cas. No. 4671-75-4

Chemical Name tetradecylphosphonic acid

SMILES CCCCCCCCCCCCCP(=O)(O)O

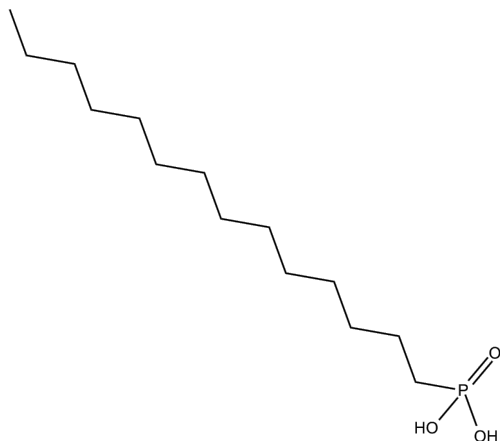
Formula $C_{14}H_{31}O_3P$ M.Wt 278.4

Solubility $\geq 27.8\text{mg/mL}$ in ETOH Storage Store at -20°C

General tips For obtaining a higher solubility, please warm the tube at 37°C and shake it in the ultrasonic bath for a while. Stock solution can be stored below -20°C for several months.

Shipping Condition Evaluation sample solution: ship with blue ice. All other available size: ship with RT, or blue ice upon request.

Structure



Background

Tetradecyl phosphonate is a pan-antagonist of lysophosphatidic acid 1 (LPA1), LPA2, and LPA3 receptors. The IC_{50} value for inhibition of LPA-induced calcium mobilization was $10\text{ }\mu\text{M}$, $5.5\text{ }\mu\text{M}$, and $3.1\text{ }\mu\text{M}$, respectively. At a concentration of $10\text{ }\mu\text{M}$, tetradecyl phosphonate activates a peroxisome proliferator-activated receptor γ reporter construct 4-fold when compared with the controls and partially inhibits autotaxin with an IC_{50} value of approximately $3\text{ }\mu\text{M}$ [1].

Caution: Product has not been fully validated for medical applications. For research use only.

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Lysophosphatidic acid (LPA), also known as autotaxin (ATX), is a lipid signalling molecule formed by the hydrolysis of lysophosphatidyl choline by lysophospholipase D [2]. LPA signals through four different G protein-coupled receptors, named as LPA1/EDG-2, LPA2/EDG-4, LPA3/EDG-7, and LPA4/GPR23 [3]. It has been reported that LPA was involved in activating peroxisome proliferator-activated receptor γ (PPAR γ) [4].

References:

- [1]. Durgam G G, Virag T, Walker M D, et al. Synthesis, structure activity relationships, and biological evaluation of fatty alcohol phosphates as lysophosphatidic acid receptor ligands, activators of PPAR γ , and inhibitors of autotaxin[J]. Journal of medicinal chemistry, 2005, 48(15): 4919-4930.
- [2]. Tokumura A, Majima E, Kariya Y, et al. Identification of human plasma lysophospholipase D, a lysophosphatidic acid-producing enzyme, as autotaxin, a multifunctional phosphodiesterase[J]. Journal of Biological Chemistry, 2002, 277(42): 39436-39442.
- [3]. Noguchi K, Ishii S, Shimizu T. Identification of p2y9/GPR23 as a novel G protein-coupled receptor for lysophosphatidic acid, structurally distant from the Edg family[J]. Journal of Biological Chemistry, 2003, 278(28): 25600-25606.
- [4]. McIntyre T M, Pontsler A V, Silva A R, et al. Identification of an intracellular receptor for lysophosphatidic acid (LPA): LPA is a transcellular PPAR γ agonist[J]. Proceedings of the National Academy of Sciences, 2003, 100(1): 131-136.

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