Product Data Sheet

Product Name: Tetradecyl Phosphonate
Cat. No.: GC17617

Chemical Properties

Cas. No.	4671-75-4		
Chemical Name	tetradecylphosphonic acid		
SMILES	CCCCCCCCCCCCCCP(=O)(O)O		
Formula	$C_{14}H_{31}O_3P$	M.Wt	278.4
Solubility	≥ 27.8mg/mL in ETOH	Storage	Store at -20°C
General tips	For obtaining a higher solubility , please warm the tube at 37 ℃ and shake it in the ultrasonic bath for a while.Stock solution can be stored below -20℃ 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	Tetradecyl Phosphonate		

Background

Tetradecyl phosphonate is a pan-antagonist of lysophosphatidic acid 1 (LPA1), LPA2, and LPA3 receptors. The IC50 value for inhibition of LPA-induced calcium mobilization was 10 μM, 5.5 μM, and 3.1 μM, respectively. At a concentration of 10 μM, tetradecyl phosphonate activates a peroxisome proliferator-activated receptor γ reporter construct 4-fold when compared with the controls and partially inhibits autotaxin with an IC50 value of approximately 3 μM [1].

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 (PPARγ) [4].

References:
[1]. Durgam G G, Virag T, Walker M D, et al. Synthesis, structure activity relationships,

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and biological evaluation of fatty alcohol phosphates as lysophosphatidic acid receptor ligands, activators of PPARγ, 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 PPARγ agonist[J]. Proceedings of the National Academy of Sciences, 2003, 100(1): 131-136.

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