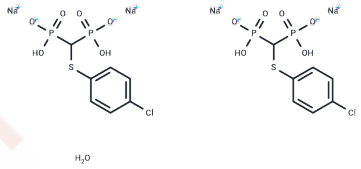
Data Sheet (Cat.No.T39037)

TargetMol

Tiludronate disodium hemihydrate

Chemical Properties



CAS No. : 155453-10-4

Formula: C14H16Cl2Na4O13P4S2

Molecular Weight: 743.16

Storage: Powder: -20°C for 3 years | In solvent: -80°C for 1 year
Actual storage temperature shall be subject to the COA.

Biological Description

Description	Tiludronate (Tiludronic Acid) disodium hemihydrate is an orally active bisphosphonate compound used primarily in metabolic bone disorder research. It functions as an osteoregulator and acts as a potent inhibitor of the osteoclast vacuolar H+ -ATPase, possessing antiresorptive and anti-inflammatory properties [4].
Targets(IC50)	Others,Proton pump
In vitro	Tiludronate exhibits significantly enhanced potency in inhibiting proton transport, with a five-fold greater efficacy in kidney-derived vesicles (IC 50 =1.1 mM) and an even more pronounced, ten-thousand-fold increase in vesicles sourced from osteoclasts (IC 50 =466 nM). Additionally, it effectively inhibits proton transport in yeast microsomal preparations (IC 50 =3.5 microM) and disrupts the function of purified yeast V-ATPase. Notably, Tiludronate's inhibition of proton transport mediated by osteoclast V-ATPase is characterized by its rapid onset, pH-dependence, and reversibility[3].
In vivo	Tiludronate exhibits a dose-dependent inhibitory effect on bone resorption, primarily by diminishing the mature osteoclasts' ability to secrete protons into the resorption space and promoting their detachment from the bone matrix. Furthermore, Tiludronate has been evaluated in various osteoporosis models, notably preventing the reduction in skeletal mass in the castrated male rat model (doses ranging from 5-200 mg/kg; orally). This prevention was confirmed through physical assessments of bone weight and density, as well as chemical analyses of calcium and phosphate content[3].

Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	1.3456 mL	6.728 mL	13.4561 mL
5 mM	0.2691 mL	1.3456 mL	2.6912 mL
10 mM	0.1346 mL	0.6728 mL	1.3456 mL
50 mM	0.0269 mL	0.1346 mL	0.2691 mL

Please select the appropriate solvent to prepare the stock solution, according to the solubility of the product in different solvents. Please use it as soon as possible.

Note: The dilution table applies only to solid products. For liquid products, please calculate the stock solution based on the stated concentration and/or density.

Reference

Reginster JY, et al. Prevention of postmenopausal bone loss by tiludronate. Lancet. 1989;2(8678-8679):1469-1471.
Nunes NLT, et al. Effects of local administration of tiludronic acid on experimental periodontitis in diabetic rats. J Periodontol. 2018;89(1):105-116.
Bonjour JP, et al. Tiludronate: bone pharmacology and safety. Bone. 1995;17(5 Suppl):473S-477S.
David P, et al. The bisphosphonate tiludronate is a potent inhibitor of the osteoclast vacuolar H(+)-ATPase. J Bone Miner Res. 1996;11(10):1498-1507.

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