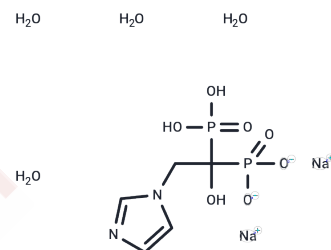


## Zoledronic acid disodium tetrahydrate

### Chemical Properties

CAS No. : 165800-07-7  
 Formula: C<sub>5</sub>H<sub>16</sub>N<sub>2</sub>Na<sub>2</sub>O<sub>11</sub>P<sub>2</sub>  
 Molecular Weight: 388.113  
 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	Zoledronic Acid (Zoledronate) disodium tetrahydrate is a potent third-generation bisphosphonate (BP) with strong anti-resorptive activity, effectively inhibiting osteoclast differentiation and apoptosis, and demonstrating anti-cancer properties [1].
Targets(IC50)	Apoptosis,Others,Antibacterial,Autophagy
In vitro	Zoledronic Acid disodium tetrahydrate, at concentrations ranging from 0.1 to 1 μM over 48 hours, enhances receptor activator of nuclear factor κB ligand (RANKL) and sclerostin mRNA expressions in osteocyte-like MLO-Y4 cells, as well as increases osteoclastogenesis supporting factor expression from the same cells. It also amplifies RANKL expression through the IL-6/JAK2/STAT3 pathway in MLO-Y4 cells, while inhibiting osteoclast differentiation and function by modulating NF-κB and JNK signaling pathways. At higher concentrations (10-100 μM, over 1 to 7 days), it significantly reduces the viability of MC3T3-E1 cells and promotes apoptosis, inhibiting cell viability through apoptosis induction at the 4-day mark. This compound also hinders the differentiation and maturation of MC3T3-E1 cells at concentrations below 1 μM. Experiments demonstrated reduced cell viability at 10 μM and 100 μM, with a dose- and time-dependent increase in early apoptotic and late apoptotic or necrotic cells at higher concentrations. Western Blot analysis revealed down-regulation of inactive caspase-3 and increased levels of active caspase-3 at 10 and 100 μM.
In vivo	Zoledronic Acid disodium tetrahydrate administered intraperitoneally (i.p.) at a dose of 0.05 mg/kg weekly for three weeks enhanced bone mineral density and content in five-week-old C57BL6 mice. At increased doses of 0.5-1 mg/kg, administered in the same manner and duration, the compound not only continued to enhance bone mineral density but also inhibited the functions of both osteoclasts and osteoblasts, as well as bone remodeling, thereby affecting the mechanical properties of bone. These findings underline the dose-dependent effects of Zoledronic Acid disodium tetrahydrate on bone health and remodeling.

### Preparing Stock Solutions

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	<b>1mg</b>	<b>5mg</b>	<b>10mg</b>
1 mM	2.5766 mL	12.8829 mL	25.7659 mL
5 mM	0.5153 mL	2.5766 mL	5.1532 mL
10 mM	0.2577 mL	1.2883 mL	2.5766 mL
50 mM	0.0515 mL	0.2577 mL	0.5153 mL

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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.

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