

Small Molecules

Zoledronic Acid

Inhibitor of bone resorption; Inhibits farnesyl diphosphate (FPP) synthase

Catalog # 73572

50 mg



Scientists Helping Scientists™ | WWW.STEMCELL.COM

TOLL FREE PHONE 1 800 667 0322 • PHONE +1 604 877 0713

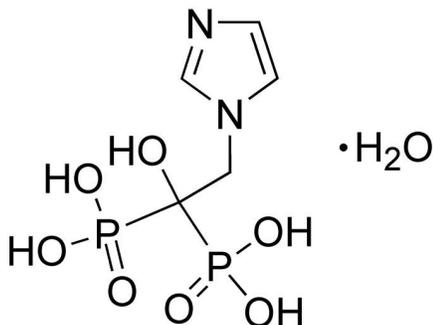
INFO@STEMCELL.COM • TECHSUPPORT@STEMCELL.COM

FOR GLOBAL CONTACT DETAILS VISIT OUR WEBSITE

Product Description

Zoledronic acid is a nitrogen-containing bisphosphonate that inhibits farnesyl diphosphate (FPP) synthase ($IC_{50} = 5$ nM), thereby preventing protein prenylation and osteoclast-mediated bone resorption (Dunford et al.). In addition, it has a high affinity for hydroxyapatite ($K_i = 3.5$ μ M), which allows it to bind directly to mineralized bone (Nancollas et al.). This product is supplied as the hydrate form of the molecule.

Molecular Name:	Zoledronic Acid (Hydrate)
Alternative Names:	Zoledronate
CAS Number:	165800-06-6
Chemical Formula:	$C_5H_{10}N_2O_7P_2 \cdot H_2O$
Molecular Weight:	290.1 g/mol
Purity:	$\geq 95\%$
Chemical Name:	(1-Hydroxy-2-imidazol-1-ylethylidene)diphosphonic acid monohydrate
Structure:	



Properties

Physical Appearance:	A crystalline solid
Storage:	Product stable at $-20^{\circ}C$ as supplied. Protect from prolonged exposure to light. Stable as supplied for 12 months from date of receipt.
Solubility:	\cdot PBS (pH 7.2) ≤ 5 mM For example, to prepare a 1 mM stock solution in PBS, resuspend 50 mg in 172 mL of PBS (pH 7.2).

Prepare stock solution fresh before use. Information regarding stability of small molecules in solution has rarely been reported, however, as a general guide we recommend storage in PBS at $-20^{\circ}C$. Aliquot into working volumes to avoid repeated freeze-thaw cycles. The effect of storage of stock solution on compound performance should be tested for each application.

For use as a cell culture supplement, stock solution should be diluted into culture medium immediately before use.

Published Applications

CANCER RESEARCH

- Inhibits proliferation, angiogenesis, and adhesion to bone in several cancer cell lines (Li & Davis; Zekri et al.).
- Inhibits breast and prostate carcinoma cell invasion in vitro (Boissier et al.; Li & Davis).
- Induces apoptosis of osteoclastoma cells in vitro (Benford et al.).

References

- Benford H. et al. (2001) Visualization of bisphosphonate-induced caspase-3 activity in apoptotic osteoclasts in vitro. *Bone* 28(5): 465–73.
- Boissier S et al. (2000) Bisphosphonates inhibit breast and prostate carcinoma cell invasion, an early event in the formation of bone metastases. *Cancer Res* 60(11): 2949–54.
- Dunford JE et al. (2001) Structure-activity relationships for inhibition of farnesyl diphosphate synthase in vitro and inhibition of bone resorption in vivo by nitrogen-containing bisphosphonates. *J Pharmacol Exp Ther* 296(2): 235–42.
- Li EC & Davis LE. (2003) Zoledronic acid: A new parenteral bisphosphonate. *Clin Ther* 25(11): 2669–708.
- Nancollas GH et al. (2006) Novel insights into actions of bisphosphonates on bone: differences in interactions with hydroxyapatite. *Bone* 38(5): 617–27.
- Zekri J et al. (2014) The anti-tumour effects of zoledronic acid. *J Bone Oncol* 3(1): 25–35.

Related Small Molecules

For a complete list of small molecules available from STEMCELL Technologies, visit www.stemcell.com/smallmolecules or contact us at techsupport@stemcell.com.

This product is hazardous. Please refer to the Safety Data Sheet (SDS).

STEMCELL TECHNOLOGIES INC.'S QUALITY MANAGEMENT SYSTEM IS CERTIFIED TO ISO 13485. PRODUCTS ARE FOR RESEARCH USE ONLY AND NOT INTENDED FOR HUMAN OR ANIMAL DIAGNOSTIC OR THERAPEUTIC USES UNLESS OTHERWISE STATED.

Copyright © 2017 by STEMCELL Technologies Inc. All rights reserved including graphics and images. STEMCELL Technologies & Design, STEMCELL Shield Design, and Scientists Helping Scientists are trademarks of STEMCELL Technologies Canada Inc. All other trademarks are the property of their respective holders. While STEMCELL has made all reasonable efforts to ensure that the information provided by STEMCELL and its suppliers is correct, it makes no warranties or representations as to the accuracy or completeness of such information.