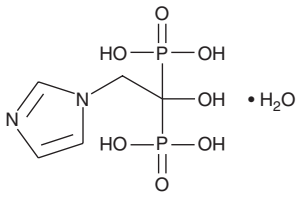
PRODUCT INFORMATION

Zoledronic Acid (hydrate)

Item No. 14984

CAS Registry No.: 165800-06-6
Formal Name: P,P'-[1-hydroxy-2-(1H-imidazol-1-yl)ethylidene]*bis*-phosphonic acid, monohydrate
MF: $C_5H_{10}N_2O_7P_2 \bullet H_2O$
FW: 290.1
Purity: ≥95%
Supplied as: A crystalline solid
Storage: -20°C
Stability: ≥4 years



Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Laboratory Procedures

Zoledronic acid (hydrate) is supplied as a crystalline solid. Aqueous solutions of zoledronic acid (hydrate) can be prepared by directly dissolving the crystalline solid in aqueous buffers. The solubility of zoledronic acid (hydrate) in PBS (pH 7.2) is approximately 1.6 mg/ml. We do not recommend storing the aqueous solution for more than one day.

Description

Zoledronic acid is a third-generation heterocyclic nitrogen-containing bisphosphonate that inhibits the prenylation of GTPases critical to the signaling events related to osteoclast-mediated bone resorption.[1] It has a high affinity for hydroxyapatite (K_i = 3.47 µM) and binds directly to mineralized bone where it decreases bone resorption by inhibiting osteoclast proliferation and inducing osteoclast apoptosis.[1,2] At µM concentrations, zoledronic acid demonstrates antitumor effects *in vitro* against breast, prostate, and myeloma cancer cells by inducing cytostasis and prevents bone metastases through its inhibitory effects on adhesion molecules, tumor cell invasion, and angiogenesis.[1] Zoledronic acid has been used in the treatment of osteoporosis, Paget's disease, metastatic bone disease, multiple myeloma, hypercalcemia of malignancy, and skeletal-related events associated with metastatic castrate-resistant prostate cancer.[1,3-6]

References

1. Li, E.C. and David, L.E. Zoledronic acid: A new parenteral bisphosphonate. *Clin. Ther.* **25(11)**, 2669-2708 (2003).
2. Nancollas, G.H., Tang, R., Phipps, R.J., *et al*. Novel insights into actions of bisphosphonates on bone: Differences in interactions with hydroxyapatite. *Bone* **38(5)**, 617-627 (2006).
3. Räkel, A., Boucher, A., and Ste-Marie, L.G. Role of zoledronic acid in the prevention and treatment of osteoporosis. *Clin. Interv. Aging* **6**, 89-99 (2011).
4. El-Amm, J., Freeman, A., Patel, N., *et al*. Bone-targeted therapies in metastatic castration-resistant prostate cancer: Evolving paradigms. *Prostate Cancer* **2013**, 1-10 (2013).
5. Major, P. The use of zoledronic acid, a novel, highly potent bisphosphonate, for the treatment of hypercalcemia of malignancy. *Oncologist* **7(6)**, 481-491 (2002).
6. Michou, L. and Brown, J.P. Emerging strategies and therapies for treatment of Paget's disease of bone. *Drug Des. Devel. Ther.* **5**, 225-239 (2011).

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