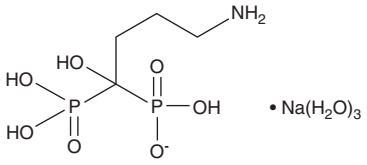
PRODUCT INFORMATION

Alendronate (sodium hydrate)

Item No. 13642

CAS Registry No.: 121268-17-5
Formal Name: P,P'-(4-amino-1-hydroxybutylidene) *bis*-phosphonic acid, monosodium salt trihydrate (1:1:3)
Synonyms: Adronat, Fosamax, G-704650, MK-217
MF: $C_4H_{12}NO_7P_2 \bullet H_6NaO_3$
FW: 325.1
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

Alendronate (sodium hydrate) is supplied as a crystalline solid. Aqueous solutions of alendronate (sodium hydrate) can be prepared by directly dissolving the crystalline solid in aqueous buffers. The solubility of alendronate (sodium hydrate) in PBS (pH 7.2) is approximately 0.25 mg/ml. We do not recommend storing the aqueous solution for more than one day.

Description

Alendronate is an amino bisphosphonate that inhibits farnesyl pyrophosphate (FPP) synthase (IC_{50} = 50 nM for the recombinant human enzyme).[1] It inhibits bone resorption in a pit formation assay using isolated rat osteoclasts (IC_{50} = 2 nM).[2] Alendronate (3 and 10 µM) reduces angiotensin II-induced collagen I synthesis in isolated rat cardiac fibroblasts.[3] It prevents femoral bone mineral density loss in ovariectomized rats when administered at a dose of 5 mg/kg.[4] Formulations containing alendronate have been used in the treatment of osteoporosis and Paget's disease.

References

1. Dunford, J.E., Thompson, K., Coxon, F.P., *et al.* 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)**, 235-242 (2001).
2. Sahni, M., Guenther, H.L., Fleisch, H., *et al.* Bisphosphonates act on rat bone resorption through the mediation of osteoblasts. *J. Clin. Invest.* **91(5)**, 2004-2011 (1993).
3. Ye, Y., Lv, X., Wang, M.-h., *et al.* Alendronate prevents angiotensin II-induced collagen I production through geranylgeranylation-dependent RhoA/Rho kinase activation in cardiac fibroblasts. *J. Pharmacol. Sci.* **129(4)**, 205-209 (2015).
4. Azuma, Y., Oue, Y., Kanatani, H., *et al.* Effects of continuous alendronate treatment on bone mass and mechanical properties in ovariectomized rats: Comparison with pamidronate and etidronate in growing rats. *J. Pharmacol. Exp. Ther.* **286(1)**, 128-135 (1998).

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