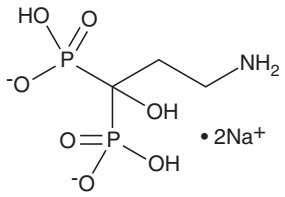
PRODUCT INFORMATION

Pamidronate (sodium salt)

Item No. 23699

CAS Registry No.: 57248-88-1
Formal Name: P,P'-(3-amino-1-hydroxypropylidene)*bis*-phosphonic acid, disodium salt
Synonyms: APD, CGP 23339A, Pamidronic Acid
MF: $C_3H_9NO_7P_2 \bullet 2Na$
FW: 279.0
Purity: ≥98%
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

Pamidronate (sodium salt) is supplied as a crystalline solid. Aqueous solutions of pamidronate (sodium salt) can be prepared by directly dissolving the crystalline solid in aqueous buffers. The solubility of pamidronate (sodium salt) in PBS, pH 7.2, is approximately 5 mg/ml. We do not recommend storing the aqueous solution for more than one day.

Description

Pamidronate is an amino bisphosphonate that inhibits farnesyl pyrophosphate (FPP) synthase (IC_{50}s = 0.85 and 0.20 µM in J774 cells and for human recombinant FPP synthase, respectively).[1] In rats, it inhibits bone resorption when used at doses of 16 µmol/kg per day, impairs long bone growth at ≥40 µmol/kg per day, and has anti-hypercalcemic effects in a rat hypercalcemia model.[2,3] At high concentrations, pamidronate induces activation of matrix metalloproteinase-2 (MMP-2), NF-κB, and caspase-3, leading to cell death, which can be prevented by activated protein C.[4] Formulations containing pamidronate have been used to treat hypercalcemia, Paget's disease, metastatic bone disease, and multiple myeloma.

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. Reitsma, P.H., Bijovet, O.L.M., Verlinden-Ooms, H., *et al.* Kinetic studies of bone and mineral metabolism during treatment with (3-amino-1-hydroxypropylidene)-1,1-bisphosphonate (APD) in rats. *Calcif. Tissue Int.* **32(2)**, 145-157 (1980).
3. Okada, M., Noguchi, S., Hasegawa, Y., *et al.* Effect of pamidronate in a rat hypercalcemia model induced by cholecalciferol. *Arzneimittelforschung* **42(4)**, 543-546 (1992).
4. Seol, J.-W., Lee, Y.-J., Jackson, C.J., *et al.* Activated protein C inhibits bisphosphonate-induced endothelial cell death *via* the endothelial protein C receptor and nuclear factor-κB pathways. *Int. J. Mol. Med.* **27(6)**, 835-840 (2011).

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