

Product data sheet



MedKoo Cat#: 574839 Name: Pamidronic acid CAS: 40391-99-9 Chemical Formula: C ₃ H ₁₁ NO ₇ P ₂ Exact Mass: 235.0011 Molecular Weight: 235.0685		
Product supplied as:	Powder	
Purity (by HPLC):	≥ 98%	
Shipping conditions	Ambient temperature	
Storage conditions:	Powder: -20°C 3 years; 4°C 2 years. In solvent: -80°C 3 months; -20°C 2 weeks.	

1. Product description:

Pamidronic acid is a biochemical.

2. CoA, QC data, SDS, and handling instruction

SDS and handling instruction, CoA with copies of QC data (NMR, HPLC and MS analytical spectra) can be downloaded from the product web page under “QC And Documents” section. Note: copies of analytical spectra may not be available if the product is being supplied by MedKoo partners. Whether the product was made by MedKoo or provided by its partners, the quality is 100% guaranteed.

3. Solubility data

Solvent	Max Conc. mg/mL	Max Conc. mM
DMSO	1.0	4.25
Water	30.5	129.75

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	4.25 mL	21.27 mL	42.54 mL
5 mM	0.85 mL	4.25 mL	8.51 mL
10 mM	0.43 mL	2.12 mL	4.25 mL
50 mM	0.09 mL	0.43 mL	0.85 mL

5. Molarity Calculator, Reconstitution Calculator, Dilution Calculator

Please refer the product web page under section of “Calculator”

6. Recommended literature which reported protocols for in vitro and in vivo study

In vitro study

1. Xu Y, Sun J, Yang X, Yu Y, Mai H, Li Z. Pamidronate Disodium Leads to Bone Necrosis via Suppression of Wnt/β-Catenin Signaling in Human Bone Marrow Mesenchymal Stem Cells In Vitro. J Oral Maxillofac Surg. 2017 Oct;75(10):2135-2143. doi: 10.1016/j.joms.2017.03.016. Epub 2017 Mar 22. PMID: 28412267.
2. Viereck V, Emons G, Lauck V, Frosch KH, Blaschke S, Gründker C, Hofbauer LC. Bisphosphonates pamidronate and zoledronic acid stimulate osteoprotegerin production by primary human osteoblasts. Biochem Biophys Res Commun. 2002 Mar 1;291(3):680-6. doi: 10.1006/bbrc.2002.6510. PMID: 11855844.

In vivo study

1. Lv Y, Xia JY, Chen JY, Zhao H, Yan HC, Yang HS, Li Q, Fan YX, Guo KJ, Chen XY. Effects of pamidronate disodium on the loss of osteoarthritic subchondral bone and the expression of cartilaginous and subchondral osteoprotegerin and RANKL in rabbits. BMC Musculoskelet Disord. 2014 Nov 6;15:370. doi: 10.1186/1471-2474-15-370. PMID: 25377946; PMCID: PMC4240862.
2. Kapitola J, Zák J. Effect of pamidronate on bone blood flow in oophorectomized rats. Physiol Res. 1998;47(4):237-40. PMID: 9803469.

7. Bioactivity

Biological target:

Pamidronic acid is a drug used to treat a broad spectrum of bone absorption diseases.

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In vitro activity

As expected, pamidronate disodium 1, 5, and 10 µg/ml were unfavorable for BMMSC growth ($P < .05$), whereas 0.1 and 0.5 µg/mL did not affect BMMSC growth ($P \geq .05$). BMMSCs treated with pamidronate disodium 0.5 µg/mL had lower ALP activity, ALP staining, and ARS staining ($P < .05$), and BMMSCs treated with low concentrations (<0.5 µg/mL) of pamidronate disodium had the same levels of ALP activity, ALP staining, and ARS staining as the control (0 µg/mL). Pamidronate disodium 0.5 µg/mL decreased the expression of genes and proteins involved in Wnt and β -catenin signaling.

Reference: J Oral Maxillofac Surg. 2017 Oct;75(10):2135-2143. <https://pubmed.ncbi.nlm.nih.gov/28412267/>

In vivo activity

Micro-CT and histology analyses indicated that PAM treatment for 2 or 10 weeks could completely prevent or reverse osteoarthritic subchondral bone loss and cartilage surface erosion. Immunohistochemistry and western blot analysis indicated that expression of OPG and RANKL increased, although RANKL expression increased more significantly than that of OPG. Therefore the ratio of OPG to RANKL was lower in the ACLT rabbit group. However, the ratio of OPG to RANKL in the PAM group was significantly higher than that in the ACLT group. Additionally, expression of MMP-9 and TLR-4 were upregulated in the ACLT group and downregulated in the PAM treated groups.

Reference: BMC Musculoskelet Disord. 2014 Nov 6;15:370. <https://pubmed.ncbi.nlm.nih.gov/25377946/>

Note: The information listed here was extracted from literature. MedKoo has not independently retested and confirmed the accuracy of these methods. Customer should use it just for a reference only.