

Product Information

Methylenediphosphonic acid

Product Number **M 9508**

Storage Temperature -0 °C

Product Description

Molecular Formula: CH₆O₆P₂

Molecular Weight: 176.0

CAS Number: 1984-15-2

Melting Point: 199-200 °C¹

Synonyms: medronic acid, methylenebisphosphonic acid, methanebisphosphonic acid, methanediphosphonic acid, MDP¹

Methylenediphosphonic acid, or medronic acid, is a diphosphonic acid that is commonly used in imaging studies of such systems as bone and neuroblastoma, in conjunction with such radioisotopes as ^{99m}Tc.¹ The distribution of ^{99m}Tc derivatives with MDP has been studied in blood components *in vitro*.² Other reports have investigated the effect of the alkylating agent cyclophosphamide and the plant alkaloid vincristine on the *in vivo* biodistribution of the Tc-MDP chelate in mice.^{3,4}

MDP has been used as a chelating agent to vary calcium levels in cell culture in a study of caffeine storage in bovine chromaffin cells.⁵ Rat osteoblast cells have been investigated for their proliferation, differentiation, and protein production on MDP-modified titanium surfaces.⁶ MDP has been shown to enhance growth yield and cAMP synthesis in *Escherichia coli* in stationary phase.⁷

Derivates of MDP with cis-platin have been synthesized and investigated by ³¹P NMR spectroscopy.⁸ Several xanthosine triphosphate derivatives have been prepared using MDP, and their effect on the prenylation of the GTPase Rab5 mutant Rab5D136N has been studied.⁹

Precautions and Disclaimer

For Laboratory Use Only. Not for drug, household or other uses.

Preparation Instructions

This product is soluble in water (50 mg/ml), with heat as needed, yielding a clear to slightly hazy, colorless solution.

References

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4. Mattos, D. M., et al., A model to evaluate the biological effect of natural products: vincristine action on the biodistribution of radiopharmaceuticals in BALB/c female mice. J. Appl. Toxicol., **19(4)**, 251-254 (1999).
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6. Viorner, C., et al., Osteoblast culture on polished titanium disks modified with phosphonic acids. J. Biomed. Mater. Res., **62(1)**, 149-155 (2002).
7. Biville, F., et al., *Escherichia coli* response to exogenous pyrophosphate and analogs. J. Mol. Microbiol. Biotechnol., **5(1)**, 37-45 (2003).

8. Slavin, L. L., and Bose, R. N., Phosphonato complexes of platinum(II): kinetics of formation and phosphorus-31 NMR characterization studies. *J. Inorg. Biochem.*, **40(4)**, 339-347 (1990).
9. Yanachkov, I., et al., Synthesis and effect of nonhydrolyzable xanthosine triphosphate derivatives on prenylation of Rab5D136N. *Mol. Pharmacol.*, **51(1)**, 47-51 (1997).

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