

Product Information

Menadione sodium bisulfite

Product Number **M 5750**

Storage Temperature -0 °C

Product Description

Molecular Formula: C₁₁H₉NaO₅S

Molecular Weight: 276.2

CAS Number: 57414-02-5

λ_{\max} : 265 nm

Extinction coefficient: $E^{\text{mM}} = 290^1$

Synonym: 2-methyl-1,4-naphthoquinone sodium bisulfite

Menadione sodium bisulfite is a water-soluble form of menadione, which belongs to the Vitamin K class of compounds. These are necessary for the biosynthesis of prothrombin and other blood clotting factors.²

Menadione is a prothrombogenic compound³ and is used as a model quinone in cell culture and *in vivo* investigations.

Menadione has been shown to affect gap-junctional intercellular communication by mediation of tyrosine phosphorylation.⁴ Menadione has demonstrated cytotoxic activity against a variety of cell lines⁵ and can induce apoptosis in cultured cells, such as osteoclasts and osteoblasts, via elevation of peroxide and superoxide radical levels.⁶

An HPLC method for detection of menadione sodium bisulfite in multivitamin formulations has been published.⁷ A chemiluminescence assay for menadione sodium bisulfite in pharmaceutical preparations and biological fluids has been reported.⁸

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), yielding a clear, colorless to faint yellow solution. The solubility of this product in water has also been reported at 500 mg/ml.³

References

1. Levorato, C., Determination of menadione sodium bisulfite in combination with antihemorrhagic vitamins. *Boll. Chim. Farm.*, **107**, 184-187 (1968).
2. Martindale The Extra Pharmacopoeia, 31st ed., Reynolds, J.E.F., ed., The Pharmaceutical Press (London, England: 1996), p. 1393.
3. The Merck Index, 12th ed., Entry# 5874.
4. Klotz, L. O., et al., 2-Methyl-1,4-naphthoquinone, vitamin K₃, decreases gap-junctional intercellular communication via activation of the epidermal growth factor receptor/extracellular signal-regulated kinase cascade. *Cancer Res.*, **62(17)**, 4922-4928 (2002).
5. Okayasu, H., et al., Cytotoxic activity of vitamins K₁, K₂ and K₃ against human oral tumor cell lines. *Anticancer Res.*, **21(4A)**, 2387-2392 (2001).
6. Sakagami, H., et al., Apoptosis-inducing activity of vitamin C and vitamin K. *Cell. Mol. Biol. (Noisy-le-grand)*, **46(1)**, 129-143 (2000).
7. Sadlej-Sosnowska, N., et al., Determination of menadione sodium hydrogen sulphite and nicotinamide in multivitamin formulations by high-performance liquid chromatography. *J. Chromatogr.*, **357(1)**, 227-232 (1986).
8. Huang, Y., et al., Chemiluminescence analysis of menadione sodium bisulfite and analgin in pharmaceutical preparations and biological fluids. *J. Pharm. Biomed. Anal.*, **21(4)**, 817-825 (1999).

GCY/AJH 12/02

Sigma brand products are sold through Sigma-Aldrich, Inc.

Sigma-Aldrich, Inc. warrants that its products conform to the information contained in this and other Sigma-Aldrich publications. Purchaser must determine the suitability of the product(s) for their particular use. Additional terms and conditions may apply. Please see reverse side of the invoice or packing slip.