



Product Information

Menadione

Product Number **M 5625**
Store at Room Temperature

Product Description

Molecular Formula: $C_{11}H_8O_2$
Molecular Weight: 172.2
CAS Number: 58-27-5
Melting point: 105-107 °C¹
 λ_{max} : 245 nm, 251 nm, 333 nm²
Extinction coefficient: $E^{1\%1cm} = 17.8, 18.6, 2.45^2$
Synonyms: 2-methyl-1,4-naphthoquinone, Vitamin K₃, menaphthone, 2-methyl-1,4-naphthalenedione

Menadione belongs to the Vitamin K class of compounds, which are necessary for the biosynthesis of prothrombin and other blood clotting factors.³ Menadione is a prothrombogenic compound¹ 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 culture lines⁵ and can induce apoptosis of cultured cells, such as osteoclasts and osteoblasts, via elevation of peroxide and superoxide radical levels.⁶

An HPLC method for detection of menadione in human plasma has been published.⁷

Precautions and Disclaimer

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

Preparation Instructions

This product is soluble in chloroform (100 mg/ml), with heating as needed, yielding a clear to slightly hazy, yellow-green solution. Menadione is also soluble in DMSO (1 mg/ml), and in ethanol (16 mg/ml).¹

Storage/Stability

Alcoholic solutions of menadione are neutral by litmus testing, and can be heated to 120 °C without decomposition. However, menadione is destroyed by alkali solutions and reducing agents. It is recommended to protect menadione from light.¹

References

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3. Martindale: The Extra Pharmacopoeia, 31st ed., Reynolds, J.E.F., ed., The Pharmaceutical Press (London, England: 1996), p. 1393.
4. Klotz, L. O., et al., 2-Methyl-1,4-naphthoquinone, vitamin K(3), 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., 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. Hu, O. Y., et al., Determination of anticancer drug vitamin K3 in plasma by high-performance liquid chromatography. *J. Chromatogr. B. Biomed. Appl.*, **666(2)**, 299-305 (1995).

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