

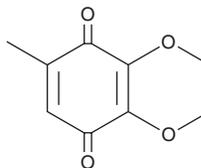
PRODUCT INFORMATION



2,3-Dimethoxy-5-methyl-*p*-benzoquinone

Item No. 20504

CAS Registry No.: 605-94-7
Formal Name: 2,3-dimethoxy-5-methyl-2,5-cyclohexadiene-1,4-dione
Synonyms: Coenzyme Q₀, CoQ₀
MF: C₉H₁₀O₄
FW: 182.2
Purity: ≥98%
UV/Vis.: λ_{max}: 268 nm
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

2,3-Dimethoxy-5-methyl-*p*-benzoquinone is supplied as a crystalline solid. A stock solution may be made by dissolving the 2,3-dimethoxy-5-methyl-*p*-benzoquinone in the solvent of choice, which should be purged with an inert gas. 2,3-Dimethoxy-5-methyl-*p*-benzoquinone is soluble in organic solvents such as ethanol, DMSO, and dimethyl formamide (DMF). The solubility of 2,3-dimethoxy-5-methyl-*p*-benzoquinone in ethanol is approximately 5 mg/ml and approximately 100 mg/ml in DMSO and DMF.

Further dilutions of the stock solution into aqueous buffers or isotonic saline should be made prior to performing biological experiments. Ensure that the residual amount of organic solvent is insignificant, since organic solvents may have physiological effects at low concentrations. Organic solvent-free aqueous solutions of 2,3-dimethoxy-5-methyl-*p*-benzoquinone can be prepared by directly dissolving the crystalline solid in aqueous buffers. The solubility of 2,3-dimethoxy-5-methyl-*p*-benzoquinone in PBS, pH 7.2, is approximately 0.2 mg/ml. We do not recommend storing the aqueous solution for more than one day.

Description

2,3-Dimethoxy-5-methyl-*p*-benzoquinone, also known as coenzyme Q₀, is a key intermediate in the synthesis of coenzyme Q, coenzyme Q₁₀, other ubiquinones, and vitamin E.^{1,2} It inhibits the growth of SKOV-3, A2780, and A2870/CP70 human ovarian carcinoma cells (IC₅₀s = 26.6, 27.3, and 28.4 μM, respectively) with a cytotoxic concentration of greater than 40 μM for non-cancerous ovarian surface epithelial cells.³ It halts the cell cycle at the G₂/M phase, increases the production of reactive oxygen species (ROS), and induces autophagy and apoptosis in SKOV-3 cells. 2,3-Dimethoxy-5-methyl-*p*-benzoquinone downregulates the protooncogene HER-2 and decreases the protein levels of phosphorylated AKT and mTOR in SKOV-3 cells. It also decreases the incidence of tumors and tumor burden in a SKOV-3 human ovarian carcinoma mouse xenograft model when administered at a dose of 2.5 mg/kg every four days.

References

1. Zalomaeva, O.V., Evtushok, V.Y., Maksimov, G.M., *et al.* *Dalton Trans.* **46(16)**, 5202-5209 (2017).
2. Adam, W., Herrmann, W.A., Lin, J., *et al.* *J. Org. Chem.* **59(26)**, 8281-8283 (1994).
3. Hsue, Y.C., Tsai, T.J., Korivi, M., *et al.* *Sci. Rep.* **7(1)**, 8062 (2017).

WARNING

THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

SAFETY DATA

This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the complete Safety Data Sheet, which has been sent via email to your institution.

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