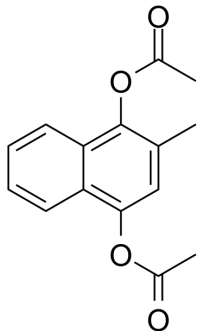
Vitamin K4

Cat. No.:	HY-B1508
CAS No.:	573-20-6
Molecular Formula:	$C_{15}H_{14}O_4$
Molecular Weight:	258.27
Target:	Endogenous Metabolite; Apoptosis
Pathway:	Metabolic Enzyme/Protease; Apoptosis
Storage:	Powder -20°C 3 years 4°C 2 years In solvent -80°C 2 years -20°C 1 year



SOLVENT & SOLUBILITY

In Vitro

DMSO : 100 mg/mL (387.19 mM; Need ultrasonic)

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	3.8719 mL	19.3596 mL	38.7192 mL
5 mM	0.7744 mL	3.8719 mL	7.7438 mL
10 mM	0.3872 mL	1.9360 mL	3.8719 mL

Please refer to the solubility information to select the appropriate solvent.

In Vivo

1. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 2.5 mg/mL (9.68 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.5 mg/mL (9.68 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (9.68 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Vitamin K4 is a chemically synthesized Vitamin K which plays an important role in the normal blood coagulation system. Vitamin K4 arrests the cells in S phase and induces apoptosis. Vitamin K4 can be used for the research of cancer, such as prostate cancer and osteosarcoma[1][2].

In Vitro

Vitamin K4 (0-100 μM, 24 h) inhibits cell proliferation in PC-3 cells (IC_{50}= 20.94 μM)[1].
Vitamin K4 (0-40 μM, 24 h) induces caspase-dependent apoptosis and S phase cell cycle arrest in PC-3 cells[1].
Vitamin K4 (0-100 μM, 24 h) inhibits the growth of U2OS cells in a dose-dependent manner (IC_{50}= 25 μM)[2].

Vitamin K4 (0-35 μM, 24 h) induces apoptosis and S phase cell cycle arrest in U2OS cells[2].
Vitamin K4 (0-35 μM, 24 h) increases ROS generation and disrupts the MMP in U2OS cells[2].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Cell Migration Assay [2]

Cell Line:	U2OS cells
Concentration:	0-25 μM
Incubation Time:	24 h
Result:	Inhibited the migration of U2OS cells in vitro.

Western Blot Analysis[1]

Cell Line:	PC-3 cells
Concentration:	0-40 μM
Incubation Time:	24 h
Result:	Decreased the expression of Bcl-2. Increased the expression of Bax, PARP, and cleaved-caspase-3. Released cytochrome c.

Western Blot Analysis[1]

Cell Line:	U2OS cells
Concentration:	0-35 μM
Incubation Time:	24 h
Result:	Increased the protein expression of pro-apoptotic protein Bax, and decreased the expression of anti-apoptotic protein Bcl-2.

REFERENCES

[1]. Di W, et al. Vitamin K4 inhibits the proliferation and induces apoptosis of U2OS osteosarcoma cells via mitochondrial dysfunction. Mol Med Rep. 2017 Jan;15(1):277-284.

[2]. Jiang Y, et al. Vitamin K4 induces tumor cytotoxicity in human prostate carcinoma PC-3 cells via the mitochondria-related apoptotic pathway. Pharmazie. 2013 Jun;68(6):442-8.

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