bpV(phen)

Cat. No.: HY-136065

CAS No.: 42494-73-5

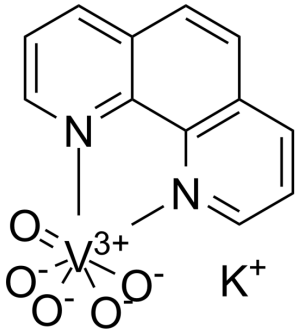
Molecular Formula: $C_{12}H_8KN_2O_5V$

Molecular Weight: 350.24

Target: PTEN; Phosphatase; Parasite; Apoptosis

Pathway: PI3K/Akt/mTOR; Metabolic Enzyme/Protease; Anti-infection; Apoptosis

Storage: Please store the product under the recommended conditions in the Certificate of Analysis.



BIOLOGICAL ACTIVITY

Description

bpV(phen), a insulin-mimetic agent, is a potent protein tyrosine phosphatase (PTP) and PTEN inhibitor with IC_{50}s of 38 nM, 343 nM and 920 nM for PTEN, PTP-β and PTP-1B, respectively. bpV(phen) inhibits proliferation of the protozoan parasite ***Leishmania*** in vitro. bpV(phen) strongly induces the secretion of a large number of chemokines and pro-inflammatory cytokines, and it activates a Th1-type pathway (IL-12, IFNγ). bpV(phen) can also induce cell apoptosis, and has anti-angiogenic and anti-tumor activity[1][2][3][4][5].

IC_{50} & Target

IC50: 38 nM (PTEN), 343 nM (PTP-β) and 920 nM (PTP-1B)[3]
Parasite Leishmania[2]
Apoptosis[1]

In Vitro

bpV(phen) (5 μM; 24.5 hours; H9c2 cells) treatment causes a further decrease of cell viability in H/R-injured H9c2 cells[1].
bpV(phen) (5 μM; 24.5 hours; H9c2 cells) treatment increases the apoptosis of H/R-injured H9c2 cells[1].
bpV(phen) (5 μM; 24.5 hours; H9c2 cells) treatment significantly promotes the accumulation of cytoplasmic Cytochrome C in H/R-injured H9c2 cells[1].
After stimulation of bpV(phen), PTEN-induced putative kinase protein 1 (PINK1)/Parkin-mediated mitophagy is inhibited[1].
bpV(phen) is an insulin-mimetic agent following insulin-receptor tyrosine kinase hyperphosphorylation and activation[4].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Cell Viability Assay[1]

Cell Line:	Hypoxia/reoxygenation (H/R)-injured H9c2 cells
Concentration:	5 μM
Incubation Time:	24.5 hours (hypoxia for 24 h; reoxygenation for 30 minutes)
Result:	Caused a further decrease of cell viability.

Apoptosis Analysis[1]

Cell Line:	Hypoxia/reoxygenation (H/R)-injured H9c2 cells
Concentration:	5 μM
Incubation Time:	24.5 hours (hypoxia for 24 h; reoxygenation for 30 minutes)

Result:	Increased the apoptosis of H/R-injured H9c2 cells.

Western Blot Analysis[1]

Cell Line:	Hypoxia/reoxygenation (H/R)-injured H9c2 cells
Concentration:	5 μM
Incubation Time:	24.5 hours (hypoxia for 24 h; reoxygenation for 30 minutes)
Result:	Showed an increased release of Cytochrome C.

In Vivo

bpV(phen) (5 mg/kg; intraperitoneal injection; daily; for 38 days; male BALB/c nude (nu/nu) athymic mice) treatment causes a significant reduction in average tumor volume[1].

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Animal Model:	Male BALB/c nude (nu/nu) athymic mice (6-7 weeks old) injected with PC-3 cells[2]
Dosage:	5 mg/kg
Administration:	Intraperitoneal injection; daily; for 38 days
Result:	Caused a significant reduction in average tumor volume.

CUSTOMER VALIDATION

- Biochem Bioph Res Co. 2020 Sep 3;529(4):1045-1052.

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REFERENCES

[1]. Tang W, et al. PTEN-mediated mitophagy and APE1 overexpression protects against cardiac hypoxia/reoxygenation injury. In Vitro Cell Dev Biol Anim. 2019 Oct;55(9):741-748.

[2]. Caron D, et al. Protein tyrosine phosphatase inhibition induces anti-tumor activity: evidence of Cdk2/p27 kip1 and Cdk2/SHP-1 complex formation in human ovarian cancer cells. Cancer Lett. 2008 Apr 18;262(2):265-75.

[3]. Schmid AC, et al. Bisperoxovanadium compounds are potent PTEN inhibitors. FEBS Lett. 2004 May 21;566(1-3):35-8.

[4]. Band CJ, et al. Early signaling events triggered by peroxovanadium [bpV(phen)] are insulin receptor kinase (IRK)-dependent: specificity of inhibition of IRK-associated protein tyrosine phosphatase(s) by bpV(phen). Mol Endocrinol. 1997 Dec;11(13):1899-910.

[5]. Chen Q, et al. Potassium Bisperoxo(1,10-phenanthroline)oxovanadate (bpV(phen)) Induces Apoptosis and Pyroptosis and Disrupts the P62-HDAC6 Protein Interaction to Suppress the Acetylated Microtubule-dependent Degradation of Autophagosomes. J Biol Chem. 2015 Oct 23;290(43):26051-8.

Caution: Product has not been fully validated for medical applications. For research use only.

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