

PX-12

## Chemical Properties

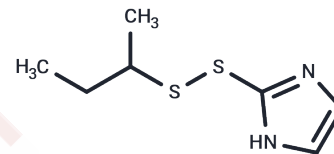
CAS No. : 141400-58-0

Formula: C<sub>7</sub>H<sub>12</sub>N<sub>2</sub>S<sub>2</sub>

Molecular Weight: 188.31

Storage: Powder: -20°C for 3 years | In solvent: -80°C for 1 year

Actual storage temperature shall be subject to the COA.



## Biological Description

Description	PX-12 (PX12) (1-methylpropyl 2-imidazolyl disulfide) is a small-molecule inhibitor of Trx-1 (thioredoxin-1), stimulates apoptosis, down-regulates HIF-1 $\alpha$ and vascular endothelial growth factor (VEGF) and inhibits tumor growth in animal models. Since high levels of Trx-1 have been associated with colorectal, gastric and lung cancers, PX-12 is indicated as a potential cancer treatment in combination with chemotherapy for patients with advanced metastatic cancer. Initial trials correlated doses of Px-12 with increased patient survival.
Targets(IC50)	Apoptosis,Others,Thioredoxin
In vitro	In MCF-7 and HT-29 cells, PX-12 prevents the hypoxia (1% oxygen)-induced increase in HIF-1 $\alpha$ protein, and decreases HIF-1-trans-activating activity, VEGF formation, and inducible nitric oxide synthase. PX-12 also inhibits the growth of MCF-7 and HT-29 cells with IC50s of 1.9 $\mu$ M and 2.9 $\mu$ M, respectively. [1] PX-12 also inhibits HIF-1 $\alpha$ protein levels through an Nrf2/PMF-1-mediated increase. [2] In A549 cells, PX-12 inhibits cell growth via G2/M phase arrest, and Bax-mediated and ROS-dependent apoptosis. [3] In hepatocellular carcinoma cells, PX-12 exerts a synergistic effect with 5-FU to significantly suppress tumorigenicity. [4]
In vivo	In mice bearing MCF-7 tumor xenografts, PX-12 (12 mg/kg, i.p.) decreases HIF-1 $\alpha$ and VEGF protein levels and microvessel density. [1]
Cell Research	Cell growth is measured using the 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide assay. Cells are exposed to a range of concentrations of PX-12 or pleurotin for 16 h in air or hypoxia (1% oxygen). The cells are then washed with warm drug-free medium and grown in air for the remainder of the 72-h incubation.(Only for Reference)

## Solubility Information

Solubility	H <sub>2</sub> O: < 1 mg/mL (insoluble or slightly soluble), Ethanol: 38 mg/mL (201.79 mM),Sonication is recommended. DMSO: 48 mg/mL (254.9 mM),Sonication is recommended. (< 1 mg/ml refers to the product slightly soluble or insoluble)
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### Preparing Stock Solutions

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	1mg	5mg	10mg
1 mM	5.3104 mL	26.552 mL	53.1039 mL
5 mM	1.0621 mL	5.3104 mL	10.6208 mL
10 mM	0.531 mL	2.6552 mL	5.3104 mL
50 mM	0.1062 mL	0.531 mL	1.0621 mL

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Please select the appropriate solvent to prepare the stock solution, according to the solubility of the product in different solvents. Please use it as soon as possible.

Note: The dilution table applies only to solid products. For liquid products, please calculate the stock solution based on the stated concentration and/or density.

### Reference

Welsh SJ, et al. *Mol Cancer Ther.* 2003, 2(3), 235-243.

Kim YH, et al. *Cancer Chemother Pharmacol.* 2011, 68(2), 405-413.

You BR, et al. *Int J Oncol.* 2014, 44(1), 301-308.

Li GZ, et al. *Am J Transl Res.* 2015, 7(9), 1528-1540.

Metcalfe C, et al. *Thioredoxin Inhibitors Attenuate Platelet Function and Thrombus Formation.* *PLoS One.* 2016 Oct 7;11(10):e0163006

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