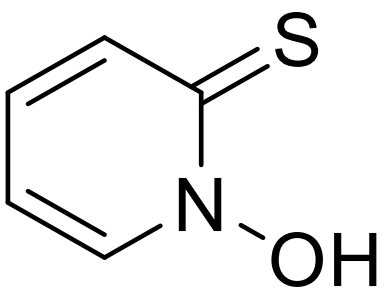
Product data sheet

MedKoo Cat#: 533192 Name: Pyrithione CAS#: 1121-31-9 Chemical Formula: C_5H_5NOS Exact Mass: 127.0092 Molecular Weight: 127.16	
Product supplied as:	Powder
Purity (by HPLC):	≥ 98%
Shipping conditions	Ambient temperature
Storage conditions:	Powder: -20°C 3 years; 4°C 2 years.
	In solvent: -80°C 3 months; -20°C 2 weeks.

1. Product description:
Pyrithione, also known as 2-mercaptopyridine N-oxide, is precursor to O-acyl thiohydroxamates. It ligates to metals to form biologically active complexes.

2. CoA, QC data, SDS, and handling instruction
SDS and handling instruction, CoA with copies of QC data (NMR, HPLC and MS analytical spectra) can be downloaded from the product web page under "QC And Documents" section. Note: copies of analytical spectra may not be available if the product is being supplied by MedKoo partners. Whether the product was made by MedKoo or provided by its partners, the quality is 100% guaranteed.

3. Solubility data

Solvent	Max Conc. mg/mL	Max Conc. mM
To be determined	To be determined	To be determined

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	7.86 mL	39.32 mL	78.64 mL
5 mM	1.57 mL	7.86 mL	15.73 mL
10 mM	0.79 mL	3.93 mL	7.86 mL
50 mM	0.16 mL	0.79 mL	1.57 mL

5. Molarity Calculator, Reconstitution Calculator, Dilution Calculator
Please refer the product web page under section of "Calculator"

6. Recommended literature which reported protocols for in vitro and in vivo study
In vitro study

1. Lopez Quezada L, Li K, McDonald SL, Nguyen Q, Perkowski AJ, Pharr CW, Gold B, Roberts J, McAulay K, Saito K, Somersan Karakaya S, Javidnia PE, Porras de Francisco E, Amieva MM, Dı Az SP, Mendoza Losana A, Zimmerman M, Liang HH, Zhang J, Dartois V, Sans S, Lagrange S, Goullieux L, Roubert C, Nathan C, Aubé J. Dual-Pharmacophore Pyrithione-Containing Cephalosporins Kill Both Replicating and Nonreplicating Mycobacterium tuberculosis. ACS Infect Dis. 2019 Aug 9;5(8):1433-1445. doi: 10.1021/acsinfecdis.9b00112. Epub 2019 Jun 11. Erratum in: ACS Infect Dis. 2019 Dec 13;5(12):2175. PMID: 31184461; PMCID: PMC7241432.
2. Krejčová P, Kučerová P, Stafford GI, Jäger AK, Kubec R. Antiinflammatory and neurological activity of pyrithione and related sulfur-containing pyridine N-oxides from Persian shallot (Allium stipitatum). J Ethnopharmacol. 2014 May 28;154(1):176-82. doi: 10.1016/j.jep.2014.03.066. Epub 2014 Apr 8. PMID: 24721027.

In vivo study

1. Lan X, Zhao C, Chen X, Zhang P, Zang D, Wu J, Chen J, Long H, Yang L, Huang H, Wang X, Shi X, Liu J. Platinum pyrithione induces apoptosis in chronic myeloid leukemia cells resistant to imatinib via DUB inhibition-dependent caspase activation and Bcr-Abl downregulation. Cell Death Dis. 2017 Jul 6;8(7):e2913. doi: 10.1038/cddis.2017.284. PMID: 28682311; PMCID: PMC5550844.

7. Bioactivity

Product data sheet

Biological target:

Pyrithione inhibits NADH-fumarate reductase purified from Trypanosoma cruzi.

In vitro activity

This study explored pyrithione-containing cephalosporins as antimycobacterial agents against Mycobacterium tuberculosis (Mtb). These compounds displayed activity against Mtb in both replicating and non-replicating states, without requiring a β-lactamase inhibitor. Their efficacy relied on the in situ release of pyrithione, which independently eliminated non-replicating Mtb, which is distinct from the A β-lactamase class BlaC. Replicating Mtb was susceptible to both released pyrithione and β-lactam.

Reference: ACS Infect Dis. 2019 Aug 9;5(8):1433-1445. https://pubmed.ncbi.nlm.nih.gov/31184461/

In vivo activity

Pyrithione can be a lead compound for further drug development to overcome imatinib resistance in chronic myelogenous leukemia (CML) patients. Pyrithione induces apoptosis in Bcr-Abl wild-type and Bcr-Abl-T315I mutation cells, inhibits the growth of imatinib-resistant Bcr-Abl-T315I xenografts, downregulates Bcr-Abl levels, and decreases Bcr-Abl protein mediated by DUBs inhibition-induced caspase activation.

Reference: Cell Death Dis. 2017 Jul 6;8(7):e2913. https://pubmed.ncbi.nlm.nih.gov/28682311/