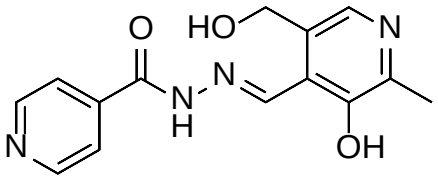
Product data sheet

MedKoo Cat#: 555535 Name: NSC77674 CAS: 737-86-0 Chemical Formula: $C_{14}H_{14}N_4O_3$ Exact Mass: 286.1066 Molecular Weight: 286.291	
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:
NSC77674, also known as Pyridoxal isonicotinoyl hydrazone and PIH is a lipophilic, nontoxic, iron-chelating agent that shows high iron chelation efficacy both in vitro in cell culture models and in vivo in rats and mice.

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
DMF	1.0	3.49
DMSO	9.86	34.42
Ethanol	0.5	1.75

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	3.49 mL	17.46 mL	34.93 mL
5 mM	0.70 mL	3.49 mL	6.99 mL
10 mM	0.35 mL	1.75 mL	3.49 mL
50 mM	0.07 mL	0.35 mL	0.70 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. Brewer CT, Yang L, Edwards A, Lu Y, Low J, Wu J, Lee RE, Chen T. The Isoniazid Metabolites Hydrazine and Pyridoxal Isonicotinoyl Hydrazone Modulate Heme Biosynthesis. Toxicol Sci. 2019 Mar 1;168(1):209-224. doi: 10.1093/toxsci/kfy294. PMID: 30517741; PMCID: PMC6390808.
2. Hermes-Lima M, Ponka P, Schulman HM. The iron chelator pyridoxal isonicotinoyl hydrazone (PIH) and its analogues prevent damage to 2-deoxyribose mediated by ferric iron plus ascorbate. Biochim Biophys Acta. 2000 Oct 18;1523(2-3):154-60. doi: 10.1016/s0304-4165(00)00115-x. PMID: 11042379.

In vivo study

1. Zhang H, Wen M, Chen J, Yao C, Lin X, Lin Z, Ru J, Zhuge Q, Yang S. Pyridoxal Isonicotinoyl Hydrazone Improves Neurological Recovery by Attenuating Ferroptosis and Inflammation in Cerebral Hemorrhagic Mice. Biomed Res Int. 2021 Sep 8;2021:9916328. doi: 10.1155/2021/9916328. PMID: 34541001; PMCID: PMC8445720.
2. Zhang G, Chen L, Wen Y, Rao Z, Wei Y, Wu X. Pyridoxal isonicotinoyl hydrazone inhibition of FXR is involved in the pathogenesis of isoniazid-induced liver injury. Toxicol Appl Pharmacol. 2020 Sep 1;402:115134. doi: 10.1016/j.taap.2020.115134. Epub 2020 Jul 14. PMID: 32673658.

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7. Bioactivity

Biological target:

Pyridoxal isonicotinoyl hydrazone (PIH) is a lipophilic, tridentate Fe-chelating agent that shows high Fe chelation efficacy.

In vitro activity

Compared with hydroxyl radical scavengers (DMSO, salicylate and mannitol), PIH (pyridoxal isonicotinoyl hydrazone) was about two orders of magnitude more active in protecting 2-deoxyribose from degradation, which was comparable with some of its analogues and DFO. 400 microM PIH was equally effective in preventing degradation of both 15 mM and 1.5 mM 2-deoxyribose. Taken together, these results indicate that PIH (and its analogues) works by a mechanism different than the hydroxyl radical scavengers.

Reference: Biochim Biophys Acta. 2000 Oct 18;1523(2-3):154-60. https://pubmed.ncbi.nlm.nih.gov/11042379/

In vivo activity

In vivo, mice treated with PIH after ICH attenuated neurological deficit scores. Additionally, this study found PIH reduced ROS production, iron accumulation, and lipid peroxidation around the hematoma peripheral tissue. Meanwhile, ICH mice treated with PIH showed an upregulation of the key ferroptosis enzyme, glutathione peroxidase 4, and downregulation of cyclooxygenase-2. Moreover, PIH administration inhibited proinflammatory polarization and reduced interleukin-1 beta and tumor necrosis factor alpha in ICH mice.

Reference: Biomed Res Int. 2021 Sep 8;2021:9916328. https://pubmed.ncbi.nlm.nih.gov/34541001/

Note: The information listed here was extracted from literature. MedKoo has not independently retested and confirmed the accuracy of these methods. Customer should use it just for a reference only.