

7-Methylguanine

Chemical Properties

CAS No. : 578-76-7

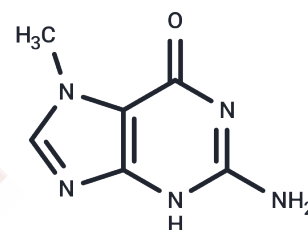
Formula: C₆H₇N₅O

Molecular Weight: 165.15

Keep away from direct sunlight

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	7-Methylguanine is an orally available PARP1 inhibitor (K _i =61 μM) that competes with the substrate NAD ⁺ , exhibiting anticancer activity. As a natural nucleic acid metabolite, it may serve as a probe for protein-DNA interactions.
Targets(IC50)	Endogenous Metabolite,PARP
In vitro	7-Methylguanine (0-200 μM) inhibits the activity of PARP1 enzyme in a dose-dependent manner [1]. 7-Methylguanine is a competitive PARP-1 inhibitor with an inhibition constant (K _i value) of 61 μM [2]. 7-Methylguanine (0-450 μM) suppresses the catalytic activity of PARP-1, thereby preventing the dissociation of the PARP-1-DNA complex [2]. After 24 hours of treatment with 7-Methylguanine (0.02-0.2 mg/mL), no DNA damage was observed in immortalized Homo sapiens renal epithelial cells (NKE-hTERT) [3].
In vivo	In CBA, BALB/c, and C57BL/6 mice, 7-Methylguanine (50 mg/kg, administered orally, three times per week for 4 weeks) did not cause adverse reactions or morphological changes, while it inhibited tumor growth in CBA mice with uterine sarcoma US-322 [3]. In BALB/c mice transplanted with Akatol tumors, 7-Methylguanine (50 mg/kg, administered via gavage, three times per week) effectively penetrated tumor tissues and suppressed the growth of colon adenocarcinoma [5].

Solubility Information

Solubility	1M NaOH: 80 mg/mL (484.41 mM),Sonication is recommended. H ₂ O: 3.3 mg/mL (19.98 mM),when pH is adjusted to 11 with 1 M NaOH. Sonication is recommended. (< 1 mg/ml refers to the product slightly soluble or insoluble)
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Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	6.0551 mL	30.2755 mL	60.551 mL
5 mM	1.211 mL	6.0551 mL	12.1102 mL
10 mM	0.6055 mL	3.0276 mL	6.0551 mL
50 mM	0.1211 mL	0.6055 mL	1.211 mL

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

- Kurgina TA, et al. Inhibitory Effects of 7-Methylguanine and Its Metabolite 8-Hydroxy-7-Methylguanine on Human Poly(ADP-Ribose) Polymerase 1. *Biochemistry (Mosc)*. 2022 Aug;87(8):823-831.
- Nilov D, et al. Molecular Mechanisms of PARP-1 Inhibitor 7-Methylguanine. *Int J Mol Sci*. 2020 Mar 20;21(6):2159.
- Kirsanov K, et al. Toxicological Properties of 7-Methylguanine, and Preliminary Data on its Anticancer Activity. *Front Pharmacol*. 2022 Jul 6;13:842316.
- Gaubatz JW, et al. Introduction, distribution, and removal of 7-methylguanine in different liver chromatin fractions of young and old mice. *Mutat Res*. 1997 Apr 14;375(1):25-35.
- Kirsanov K, et al. 7-Methylguanine Inhibits Colon Cancer Growth in Vivo. *Acta Naturae*. 2024 Apr-Jun;16(2):50-52.
- Lee S, et al. Synthesis and structure of duplex DNA containing the genotoxic nucleobase lesion N7-methylguanine. *J Am Chem Soc*. 2008 Sep 3;130(35):11570-1.

Inhibitor · Natural Compounds · Compound Libraries · Recombinant Proteins

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