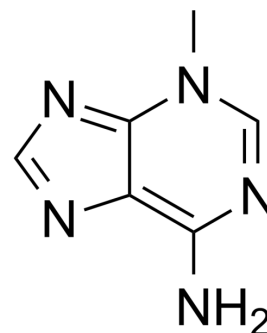


3-Methyladenine

Cat. No.:	HY-19312		
CAS No.:	5142-23-4		
Molecular Formula:	C ₆ H ₇ N ₅		
Molecular Weight:	149.15		
Target:	PI3K; Autophagy; Mitophagy; Endogenous Metabolite		
Pathway:	PI3K/Akt/mTOR; Autophagy; Metabolic Enzyme/Protease		
Storage:	Powder	-20°C	3 years
		4°C	2 years
	In solvent	-80°C	6 months
		-20°C	1 month



SOLVENT & SOLUBILITY

In Vitro

H₂O : 5 mg/mL (33.52 mM; Need ultrasonic)
 DMSO : 8.33 mg/mL (55.85 mM; Need ultrasonic)

Preparing Stock Solutions	Solvent Concentration	Mass		
		1 mg	5 mg	10 mg
	1 mM	6.7047 mL	33.5233 mL	67.0466 mL
	5 mM	1.3409 mL	6.7047 mL	13.4093 mL
	10 mM	0.6705 mL	3.3523 mL	6.7047 mL

Please refer to the solubility information to select the appropriate solvent.

In Vivo

- Add each solvent one by one: 50% PEG300 >> 50% saline
 Solubility: 25 mg/mL (167.62 mM); Clear solution; Need ultrasonic and warming and heat to 50°C
- Add each solvent one by one: PBS
 Solubility: 4 mg/mL (26.82 mM); Clear solution; Need ultrasonic

BIOLOGICAL ACTIVITY

Description

3-Methyladenine (3-MA) is a PI3K inhibitor. 3-Methyladenine is a widely used inhibitor of autophagy via its inhibitory effect on class III PI3K^[1].

IC₅₀ & Target

PtdIns3Ky 60 μM (IC ₅₀ , Cell Assay)	Vps34 25 μM (IC ₅₀ , Cell Assay)	Autophagy	Mitophagy
Human Endogenous Metabolite			

In Vitro

3-Methyladenine (0-10 mM; 0-48 hours) induces caspase-dependent cell death in HeLa cells in a time-and dose-dependent manner^[2].

3-Methyladenine (5 mM; 24 hours) suppresses autophagy in HeLa cells under both glucose-free conditions and normal conditions^[2].

3-Methyladenine (5 mM; 0-48 hours) suppresses conversion of LC3-I to LC3-II (autophagy markers) between 12hours and 48 hours, confirms the inhibitory effects on autophagy^[2].

3-Methyladenine induces cell death is independent of autophagy inhibition^[2].

3-Methyladenine significantly shortens the duration of nocodazole-induced-prometaphase arrest^[2].

Note:

The recommended concentration of 3-MA is approximately 0.5-10 mM in cell culture. DMSO stock solution is not recommended. We suggest that you can weigh out the amount of 3-MA you required before your experiment. Then please dissolve it in medium and sterilize with a 0.22 µm filter.

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Cell Viability Assay^[2]

Cell Line:	HeLa cells
Concentration:	0 mM, 2.5 mM or 5 mM, 10 mM
Incubation Time:	0 hour, 24 hours and 48 hours
Result:	Decreased cell viability in a time-and dose-dependent manner, and was associated with caspase-3 activation.

Cell Autophagy Assay^[2]

Cell Line:	HeLa cells
Concentration:	5 mM
Incubation Time:	24 hours
Result:	Suppressed autophagy in HeLa cells under both glucose-free conditions and normal conditions.

Western Blot Analysis^[2]

Cell Line:	HeLa cells
Concentration:	5 mM
Incubation Time:	0 hour, 12 hours, 24 hours and 48 hours
Result:	Suppressed conversion of LC3-I to LC3-II between 12 hours and 48 hours.

In Vivo

3-Methyladenine (1.5 mg/100 g; intraperitoneal injection; 3-24 hours) treatment alleviates sodium taurocholate-induced severe acute pancreatitis (SAP) in rats at both 12 hours and 24 hours^[3].

3-Methyladenine inhibits autophagy of pancreatic acinar cells in sodium taurocholate-induced SAP^[3].

3-Methyladenine also shows inhibitory effects on PI3K/Akt signaling pathway and NF-κB signaling pathway in sodium taurocholate-induced SAP^[3].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Animal Model:	10–12 weeks Specific pathogen free- (SPF-) grade healthy male Sprague-Dawley (SD) rats (250–290 g) ^[3]
Dosage:	1.5 mg/100 g (1000 µM)

Administration:	Intraperitoneal injection
Result:	Alleviated Sodium Taurocholate-Induced SAP.

CUSTOMER VALIDATION

- Signal Transduct Target Ther. 2022 Dec 9;7(1):388.
- Signal Transduct Target Ther. 2022 Jun 24;7(1):190.
- Mol Cancer. 2019 Apr 10;18(1):85.
- Cell Host Microbe. 2023 Nov 8;31(11):1820-1836.e10.
- Cell Metab. 2023 Nov 16:S1550-4131(23)00386-8.

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REFERENCES

- [1]. Miller S, et al. Finding a fitting shoe for Cinderella: searching for an autophagy inhibitor. *Autophagy*. 2010 Aug;6(6):805-7.
- [2]. Hou H, et al. Inhibitors of phosphatidylinositol 3'-kinases promote mitotic cell death in HeLa cells. *PLoS One*. 2012;7(4):e35665.
- [3]. Wang X, et al. *Acanthopanax* versus 3-Methyladenine Ameliorates Sodium Taurocholate-Induced Severe Acute Pancreatitis by Inhibiting the Autophagic Pathway in Rats. *Mediators Inflamm*. 2016;2016:8369704.

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

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