3-Methyladenine

Cat. No.: HY-19312

CAS No.: 5142-23-4

Molecular Formula: $C_6H_7N_5$

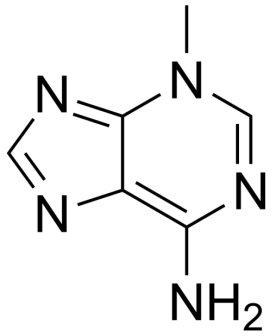
Molecular Weight: 149.15

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

H_2O : 5 mg/mL (33.52 mM; Need ultrasonic)
DMSO : 8.33 mg/mL (55.85 mM; Need ultrasonic)

Preparing Stock Solutions

Solvent / Mass / Concentration	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

1. 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
2. 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].

IC_{50} & Target

PtdIns3Kγ 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-tnduced 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.

See more customer validations on www.MedChemExpress.com

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.

Tel: 609-228-6898 Fax: 609-228-5909 E-mail: tech@MedChemExpress.com

Address: 1 Deer Park Dr, Suite Q, Monmouth Junction, NJ 08852, USA