Adenosine

Cat. No.: HY-B0228

CAS No.: 58-61-7

Molecular Formula: $C_{10}H_{13}N_5O_4$

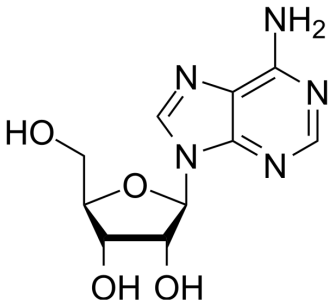
Molecular Weight: 267.24

Target: Nucleoside Antimetabolite/Analog; Autophagy; Endogenous Metabolite; Apoptosis

Pathway: Cell Cycle/DNA Damage; Autophagy; Metabolic Enzyme/Protease; Apoptosis

Storage:

Powder	-20°C	3 years
	4°C	2 years
In solvent	-80°C	1 year
	-20°C	6 months



SOLVENT & SOLUBILITY

In Vitro

DMSO : 33.33 mg/mL (124.72 mM; Need ultrasonic)

H_2O : ≥ 6.67 mg/mL (24.96 mM)

* "≥" means soluble, but saturation unknown.

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	3.7420 mL	18.7098 mL	37.4195 mL
5 mM	0.7484 mL	3.7420 mL	7.4839 mL
10 mM	0.3742 mL	1.8710 mL	3.7420 mL

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

In Vivo

1. Add each solvent one by one: PBS
   Solubility: 6.67 mg/mL (24.96 mM); Clear solution; Need ultrasonic and warming and heat to 60°C

BIOLOGICAL ACTIVITY

Description

Adenosine (Adenine riboside), a ubiquitous endogenous autacoid, acts through the enrollment of four G protein-coupled receptors: A1, A2A, A2B, and A3. Adenosine affects almost all aspects of cellular physiology, including neuronal activity, vascular function, platelet aggregation, and blood cell regulation[1][2].

IC_{50} & Target

Human Endogenous Metabolite	Microbial Metabolite

In Vitro

Adenosine (Adenine riboside) acts on four G-protein coupled receptors: two of them, A1 and A3, are primarily coupled to Gi family G proteins; and two of them, A2A and A2B, are mostly coupled to Gs like G proteins. These receptors are antagonized by xanthines including caffeine. Via these receptors it affects many cells and organs, usually having a cytoprotective function

[2].

Adenosine is an extracellular signaling molecule that is generated from its precursor molecules 5'-adenosine triphosphate (ATP) and 5'-adenosine monophosphate (AMP)[3].

Adenosine is a common metabolite of ATP, which exhibits cytotoxic effects at high concentrations.Adenosine (1.0-4.0 mM; 12-24 hours) inhibits cell viability and triggers ER stress in HepG2 cells[4].

Adenosine induces apoptosis in a variety of cancer cells. Adenosine (2.0 mM; 12-24 hours) induces autophagy in HepG2 cells. In HepG2 cell lines, Adenosine -induced AMPK/mTOR pathway activation partially blocked ER stress and decreased apoptotic cell death[4].

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

CUSTOMER VALIDATION

- Nat Commun. 2023 Mar 27;14(1):1694.
- Nat Commun. 2022 Oct 26;13(1):6350.
- Cell Death Dis. 2020 Mar 23;11(3):202.
- Talanta. 2023 Sep 6, 125171.
- Int J Mol Med. 2016 Sep;38(3):969-75.

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REFERENCES

[1]. Borea PA, Gessi S, Merighi S, Vincenzi F, Varani K. Pharmacology of Adenosine Receptors: The State of the Art. Physiol Rev. 2018;98(3):1591-1625.

[2]. Fredholm BB. Adenosine, an endogenous distress signal, modulates tissue damage and repair. Cell Death Differ. 2007;14(7):1315-1323.

[3]. Zhou XT, et al. Inhibition of autophagy enhances adenosine induced apoptosis in human hepatoblastoma HepG2 cells. Oncol Rep. 2019;41(2):829-838.

[4]. Eltzschig HK. Adenosine: an old drug newly discovered. Anesthesiology. 2009;111(4):904-915.

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