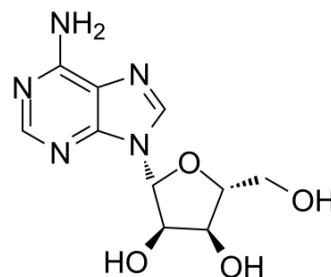


## Adenosine

<b>Cat. No.:</b>	HY-B0228		
<b>CAS No.:</b>	58-61-7		
<b>Molecular Formula:</b>	C <sub>10</sub> H <sub>13</sub> N <sub>5</sub> O <sub>4</sub>		
<b>Molecular Weight:</b>	267.24		
<b>Target:</b>	Nucleoside Antimetabolite/Analog; Autophagy; Apoptosis; Endogenous Metabolite		
<b>Pathway:</b>	Cell Cycle/DNA Damage; Autophagy; Apoptosis; Metabolic Enzyme/Protease		
<b>Storage:</b>	Powder	-20°C	3 years
		4°C	2 years
	In solvent	-80°C	6 months
		-20°C	1 month



### SOLVENT & SOLUBILITY

#### In Vitro

DMSO : 33.33 mg/mL (124.72 mM; Need ultrasonic)  
 H<sub>2</sub>O : ≥ 6.67 mg/mL (24.96 mM)  
 \* "≥" means soluble, but saturation unknown.

Preparing Stock Solutions	Solvent		1 mg	5 mg	10 mg
	Concentration	Mass			
	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.

### 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<sup>[1][2]</sup>.

#### IC<sub>50</sub> & Target

Human Endogenous 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<sup>[2]</sup>.

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

Adenosine is a common metabolite of ATP, which exhibits cytotoxic effects at high concentrations. Adenosine (1.0-4.0 mM;

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12-24 hours) inhibits cell viability and triggers ER stress in HepG2 cells<sup>[4]</sup>.

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<sup>[4]</sup>.

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

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## CUSTOMER VALIDATION

- Cell Death Dis. 2020 Mar 23;11(3):202.
- J Mol Med (Berl). 2019 Aug;97(8):1183-1193.
- 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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**Caution: Product has not been fully validated for medical applications. For research use only.**

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