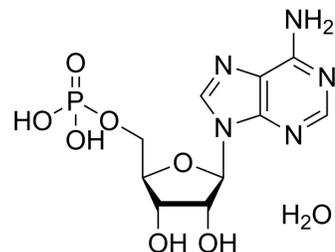


## Adenosine 5'-monophosphate monohydrate

<b>Cat. No.:</b>	HY-A0181A		
<b>CAS No.:</b>	18422-05-4		
<b>Molecular Formula:</b>	C <sub>10</sub> H <sub>16</sub> N <sub>5</sub> O <sub>8</sub> P		
<b>Molecular Weight:</b>	365.24		
<b>Target:</b>	Adenosine Receptor; HSV; Endogenous Metabolite		
<b>Pathway:</b>	GPCR/G Protein; Anti-infection; Metabolic Enzyme/Protease		
<b>Storage:</b>	Powder	-20°C	3 years
		4°C	2 years
	In solvent	-80°C	2 years
		-20°C	1 year



### SOLVENT & SOLUBILITY

<b>In Vitro</b>	H <sub>2</sub> O : 5 mg/mL (13.69 mM; Need ultrasonic and warming)			
		Solvent Concentration	Mass	
			1 mg	5 mg
			10 mg	
<b>Preparing Stock Solutions</b>	<b>1 mM</b>	2.7379 mL	13.6896 mL	27.3793 mL
	<b>5 mM</b>	0.5476 mL	2.7379 mL	5.4759 mL
	<b>10 mM</b>	0.2738 mL	1.3690 mL	2.7379 mL
Please refer to the solubility information to select the appropriate solvent.				
<b>In Vivo</b>	1. Add each solvent one by one: PBS Solubility: 5.26 mg/mL (14.40 mM); Clear solution; Need ultrasonic and warming and heat to 60°C			

### BIOLOGICAL ACTIVITY

<b>Description</b>	Adenosine 5'-monophosphate monohydrate is an adenosine A <sub>1</sub> receptor agonist. Adenosine 5'-monophosphate monohydrate has significant antiviral activity against HSV-1 and HSV-2.			
<b>IC<sub>50</sub> &amp; Target</b>	Microbial Metabolite	HSV-1	HSV-2	Human Endogenous Metabolite
<b>In Vitro</b>	Adenosine 5'-monophosphate monohydrate is an adenosine A <sub>1</sub> receptor agonist <sup>[1]</sup> . Adenosine 5'-monophosphate monohydrate (5'-AMP)-induced cell toxicity is negligible at concentrations of 25 to 400 μM in RAW264.7 cells. Adenosine 5'-monophosphate monohydrate significantly attenuates the mRNA expression of tumor necrosis factor-α (TNF-α) and interleukin (IL)-6 in RAW264.7 cells. The dose-dependence of TNF-α and IL-6 mRNA show that at concentration of 400 μM, Adenosine 5'-monophosphate monohydrate exhibits the maximum inhibition. Exposure of cells to Adenosine 5'-monophosphate monohydrate significantly reduces recruitment of NF-κB p65 to TNF-α, IL-6, and IL-1β gene promoters <sup>[2]</sup> .			

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

#### In Vivo

C57BL/6J mice treated with Adenosine 5'-monophosphate monohydrate (5'-AMP) markedly increases hepatic adenosine level. Survival rate in PBS-treated mice (n=15) is 60% (8 h) and 33.3% (24 h), whereas survival rate in Adenosine 5'-monophosphate monohydrate-treated mice (n=15) is 100% (8 h) and 93.3% (24 h). Serum aspartate transaminase (AST) and alanine transaminase (ALT) levels are significantly lowered in the Adenosine 5'-monophosphate monohydrate group than in the vehicle group. The area and extent of necrosis is attenuated and the infiltration of inflammatory cells is reduced in the Adenosine 5'-monophosphate monohydrate group<sup>[2]</sup>.

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

## PROTOCOL

#### Kinase Assay <sup>[2]</sup>

RAW264.7 cells are plated in 100-mm dishes and stimulated with lipopolysaccharide (LPS) for 1 h. Cross-linked chromatin are sonicated into DNA fragment of 0.5 to 1.0 kb. For in vitro biochemical experiments, the sonicated cell lysates are incubated with Adenosine 5'-monophosphate monohydrate (5'-AMP) (400  $\mu$ M) at 37°C for 30 min. Then chromatin is precleared with 50% salmon sperm DNA-saturated protein A agarose beads and immunoprecipitated with 5  $\mu$ g of antibody <sup>[2]</sup>.

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#### Cell Assay <sup>[2]</sup>

The RAW264.7 cells (a murine macrophage cell line) are maintained in supplemented RPMI 1640 in an atmosphere at 90% humidity containing 5% CO<sub>2</sub> at 37°C. At the end of the pre-incubated period, cells are rinsed with PBS and the medium is supplemented with RPMI 1640 without fetal bovine serum. The cells are pretreated with Adenosine 5'-monophosphate monohydrate (5'-AMP) (400  $\mu$ M) for 30 min<sup>[2]</sup>.

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#### Animal Administration <sup>[2]</sup>

Male WT C57BL/6J mice are used at 8 to 10 weeks of age with a body weight of 20 to 25 g in this work. For Adenosine 5'-monophosphate monohydrate (5'-AMP)-pretreated survival experiment, WT mice are randomly divided into two groups (n=15 in each group). Adenosine 5'-monophosphate monohydrate (5 mg/20 g body weight i.p.) or PBS is administered to mice. For general experiment, WT mice are randomly divided into different groups (n=5 in each group): (1) vehicle/vehicle group; (2) Adenosine 5'-monophosphate monohydrate/vehicle group. Mice are killed and the blood is collected from the carotid artery. The liver of each mouse is removed immediately and then is kept at -80°C until analyzed<sup>[2]</sup>.

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

## CUSTOMER VALIDATION

- Theranostics. 2020 Aug 13;10(22):10245-10261.
- Stem Cell Res Ther. 2023 Sep 29;14(1):277.
- Molecules. 2023 Apr 11, 28(8), 3375.
- Genes (Basel). 2022 Dec 16;13(12):2384.
- Biochem Biophys Res Commun. 2024 May 14, 708, 149814.

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## REFERENCES

[1]. Rittiner JE, et al. AMP is an adenosine A1 receptor agonist. J Biol Chem. 2012 Feb 17;287(8):5301-9.

[2]. Zhan Y, et al. Adenosine 5'-monophosphate ameliorates D-galactosamine/lipopolysaccharide-induced liver injury through an adenosine receptor-independent

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mechanism in mice. Cell Death Dis. 2014 Jan 9;5:e985.

[3]. Ayisi NK, et al. Comparison of the antiviral effects of 5-methoxymethyldeoxyuridine-5'-monophosphate with adenine arabinoside-5'-monophosphate. Antiviral Res. 1983 Sep;3(3):161-74.

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

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