ATP disodium salt

Cat. No.: HY-B0345A

CAS No.: 987-65-5

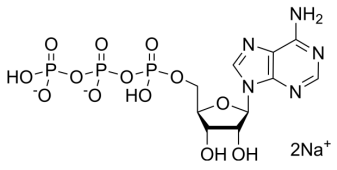
Molecular Formula: $C_{10}H_{14}N_5Na_2O_{13}P_3$

Molecular Weight: 551.14

Target: Endogenous Metabolite

Pathway: Metabolic Enzyme/Protease

Storage: 4°C, sealed storage, away from moisture
* In solvent : -80°C, 6 months; -20°C, 1 month (sealed storage, away from moisture)



SOLVENT & SOLUBILITY

In Vitro

H_2O : 100 mg/mL (181.44 mM; Need ultrasonic)
DMSO : < 1 mg/mL (insoluble or slightly soluble)

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	1.8144 mL	9.0721 mL	18.1442 mL
5 mM	0.3629 mL	1.8144 mL	3.6288 mL
10 mM	0.1814 mL	0.9072 mL	1.8144 mL

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

In Vivo

1. Add each solvent one by one: PBS
Solubility: 100 mg/mL (181.44 mM); Clear solution; Need ultrasonic

BIOLOGICAL ACTIVITY

Description

ATP disodium salt (Adenosine 5'-triphosphate disodium salt) is a central component of energy storage and metabolism in vivo, provides the metabolic energy to drive metabolic pumps and serves as a coenzyme in cells. ATP disodium salt is an important endogenous signaling molecule in immunity and inflammation[1][2].

IC_{50} & Target

Human Endogenous Metabolite

In Vitro

ATP disodium salt (5mM; 1 hour) co-treatment with LPS (1 μg/ml) has a synergistic effect on the activation of the NLRP3 inflammasome in HGFs[3].
?ATP disodium salt (2 mM; 0.5-24 hours) induces secretion of interleukin 1β, KC and MIP-2 from bone marrow derived macrophages (BMDMs) in vitro in a caspase-1 activation-dependent manner[4].
?ATP disodium salt stimulats cytokine and chemokine secretion and inflammasome activation directly and indirectly induces in vitro neutrophil chemotaxis[4].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

In Vivo

ATP disodium salt (50 mg/kg; i.p.) protects mice against bacterial infection in vivo[4].

?ATP disodium salt induces the secretion of IL1β, KC and MIP-2 and neutrophils recruitment in vivo[4].

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

Animal Model:	Four-week-old Kunming mice (18-22 g)[4]
Dosage:	50 mg/kg
Administration:	Intraperitoneal injection, before bacterial (E. coli) challenge
Result:	Protected mice from bacterial infection.

CUSTOMER VALIDATION

- Protein Cell. 2021 Oct 22;1-21.
- ACS Nano. 2023 Nov 21.
- Mol Cell. 2023 May 19;S1097-2765(23)00324-6.
- Mol Cell. 2022 Apr 14:S1097-2765(22)00290-8.
- Crit Care. 2021 Oct 12;25(1):356.

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REFERENCES

[1]. Bonora M, et al. ATP synthesis and storage. Purinergic Signal. 2012 Sep;8(3):343-57.

[2]. M J L Bours, et al. Adenosine 5'-triphosphate and adenosine as endogenous signaling molecules in immunity and inflammation. Pharmacol Ther. 2006 Nov;112(2):358-404.

[3]. Shuo Xu, et al. Doxycycline inhibits NAcht Leucine-rich repeat Protein 3 inflammasome activation and interleukin-1β production induced by Porphyromonas gingivalis-lipopolysaccharide and adenosine triphosphate in human gingival fibroblasts. Arch Oral Biol. 2019 Nov;107:104514.

[4]. Yang Xiang, et al. Adenosine-5'-Triphosphate (ATP) Protects Mice against Bacterial Infection by Activation of the NLRP3 Inflammasome. PLoS One. 2013; 8(5): e63759.

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