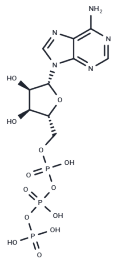
Data Sheet (Cat.No.T20089)

TargetMol

ATP

Chemical Properties



CAS No. : 56-65-5

Formula: C10H16N5O13P3

Molecular Weight: 507.18

Storage: Keep away from moisture,Keep away from direct sunlight,Store at low temperature,Store under nitrogen
Powder: -20°C for 3 years | In solvent: -80°C for 1 year
Actual storage temperature shall be subject to the COA.

Biological Description

Description	ATP (Adenosine triphosphate) provides cellular energy, participates in overall energy balance, and maintains intracellular homeostasis. ATP can act as an extracellular signaling molecule through interactions with specific purinergic receptors to mediate a variety of processes including neurotransmission, inflammation, apoptosis, and bone remodeling.
Targets(IC50)	Endogenous Metabolite
In vitro	**METHODS**: Synovial fibroblast HSF were rapidly treated (wash-in and wash-out ~2 s) with ATP (10 μM) three times, and [Ca2+] changes were detected using Fluo-4 fluorescence. **RESULTS**: During the first application of ATP, Fluo-4 fluorescence increased rapidly after a delay of a few seconds and decreased slightly before the end of ATP application. After removal of ATP, the fluorescence signal returned to resting levels, but fluorescence decreased much more slowly than it had begun after the initial ATP application. The two subsequent ATP applications produced a response of less amplitude than the first, and the delay until the onset of the response appeared to lengthen with successive applications. [1] **METHODS**: Mouse bone marrow-derived macrophages BMDM were stimulated with LPS, HKEC, or HKSA, followed by treatment with ATP (2 mM) for 0.5-24 h. Levels of IL-1β, KC, and MIP-2 were determined using ELISA. **RESULTS**: ATP treatment strongly induced the secretion of IL-1β, KC and MIP-2. [2]
In vivo	**METHODS**: To test the antibacterial activity in vivo, ATP (50 mg/kg) was injected intraperitoneally into Kunming mice, and E. coli 25922 or S. aureus 25923 was injected 1-24 h later. **RESULTS**: The administration of ATP 4 h or 24 h before the attack did significantly increase the survival rate of infected mice, regardless of the bacterial type. [2] **METHODS**: To assay in vivo antibacterial activity, ATP (40 mg/kg), clarithromycin (12 mg/kg), and rifampin (8 mg/kg) were injected subcutaneously into MAC-infected BALB/c mice five times per week for eight weeks. **RESULTS**: Co-administration of ATP with clarithromycin and rifampin accelerated bacterial clearance in MAC-infected mice without resulting in changes in histopathologic

In vivo	features or mRNA expression of pro- or anti-inflammatory cytokines in mice not given ATP. [3]

Solubility Information

Solubility	DMSO: 1.67 mg/mL (3.29 mM),Sonication is recommended. H2O: 118.8 mg/mL (234.24 mM),Sonication is recommended. (< 1 mg/ml refers to the product slightly soluble or insoluble)

Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	1.9717 mL	9.8584 mL	19.7169 mL
5 mM	0.3943 mL	1.9717 mL	3.9434 mL
10 mM	0.1972 mL	0.9858 mL	1.9717 mL
50 mM	0.0394 mL	0.1972 mL	0.3943 mL

Please select the appropriate solvent to prepare the stock solution, according to the solubility of the product in different solvents. Please use it as soon as possible.

Note: The dilution table applies only to solid products. For liquid products, please calculate the stock solution based on the stated concentration and/or density.

Reference

Kondo C, et al. ATP triggers a robust intracellular [Ca2+]-mediated signalling pathway in human synovial fibroblasts. Exp Physiol. 2018 Aug;103(8):1101-1122.
Li X, Li X, Xiang C, et al.Starvation-induced phosphorylation activates gasdermin A to initiate pyroptosis.Cell Reports.2024, 43(9).
Xiang Y, et al. Adenosine-5'-triphosphate (ATP) protects mice against bacterial infection by activation of the NLRP3 inflammasome. PLoS One. 2013 May 22;8(5):e63759.
Selective degradation of multimeric proteins by TRIM21-based molecular glue and PROTAC degraders
Tomioka H, et al. Combined effects of ATP on the therapeutic efficacy of antimicrobial drug regimens against Mycobacterium avium complex infection in mice and roles of cytosolic phospholipase A2-dependent mechanisms in the ATP-mediated potentiation of antimycobacterial host resistance. J Immunol. 2005 Nov 15;175(10):6741-9.
Zhang R, Li G, Zhang Q, Tang Q, Huang J, Hu C, Liu Y, Wang Q, Liu W, Gao N, Zhou S. Hirsutine induces mPTP-dependent apoptosis through ROCK1/PTEN/PI3K/GSK3β pathway in human lung cancer cells. Cell Death Dis. 2018 May 22;9(6):598. doi: 10.1038/s41419-018-0641-7. PubMed PMID: 29789524.