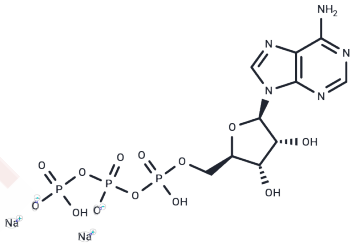
Data Sheet (Cat.No.T1352)

TargetMol

ATP disodium salt

Chemical Properties



CAS No. : 987-65-5

Formula: C10H14N5O13P3·2Na

Molecular Weight: 551.14

Appearance: no data available

Storage: Powder: -20°C for 3 years | In solvent: -80°C for 1 year

Biological Description

Description	ATP disodium salt (Adenosine-Triphosphate) is a P2 purinoceptor agonist.
Targets(IC50)	Endogenous Metabolite,P2X Receptor
In vitro	ATP release and autocrine feedback through P2Y2 and A3 receptors provide signal amplification, controlling gradient sensing and migration of neutrophils. [1] ATP results in production of reactive oxygen species (ROS), which stimulates the phosphatidylinositol 3-kinase (PI3K) pathway and subsequent Akt and ERK1/2 activation. ATP-dependent ROS production and PI3K activation also stimulate transcription of genes required for an oxidative stress response. ATP-mediated ROS-dependent PI3K is required for activation of caspase-1 and secretion of IL-1beta and IL-18. [2] ATP potently stimulates TNF-alpha release, resulting from TNF-alpha mRNA expression in rat cultured brain microglia. ATP-induced TNF-alpha release is Ca(2+)-dependent, and a sustained Ca(2+) influx correlated with the TNF-alpha release in ATP-stimulated microglia. ATP-induced TNF-alpha release is inhibited by PD 098059, an inhibitor of extracellular signal-regulated protein kinase (ERK) kinase 1 (MEK1), which activates ERK, and also by SB 203580, an inhibitor of p38 mitogen-activated protein kinase. ATP rapidly activates both ERK and p38 even in the absence of extracellular Ca (2+). [3] ATP-induced cytotoxicity is mediated by classical alterations of apoptosis, including membrane blebbing, nuclear condensation, and DNA fragmentation. ATP but not other nucleotides lead to the potent and selective activation of NF-κB in microglial cells through a P2Z receptor-mediated pathway. [4]
In vivo	ATP regulates microglial branch dynamics in the intact mice brain, and its release from the damaged tissue and surrounding astrocytes mediates a rapid microglial response towards injury. [5]

Solubility Information

Solubility	DMSO: Insoluble, H2O: 10 mM,Sonication is recommended. (< 1 mg/ml refers to the product slightly soluble or insoluble)

Preparing Stock Solutions

	1mg	5mg	10mg
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
50 mM	0.0363 mL	0.1814 mL	0.3629 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.

Reference

Chen Y, et al. Science,2006, 314(5806), 1792-1795.
Cruz CM, et al. J Biol Chem,2007, 282(5), 2871-2879.
Hide I, et al. J Neurochem,2000, 75(3), 965-972.
Ferrari D, et al. J Cell Biol,1997, 139(7), 1635-1643.
Davalos D, et al. Nat Neurosci,2005, 8(6), 752-758.