ATP

Cat. No.: HY-B2176
CAS No.: 56-65-5
Molecular Formula: $C_{10}H_{16}N_{5}O_{13}P_{3}$
Molecular Weight: 507.18
Target: Endogenous Metabolite
Pathway: Metabolic Enzyme/Protease
Storage: Powder
-20°C 3 years
4°C 2 years
In solvent
-80°C 6 months
-20°C 1 month

SOLVENT & SOLUBILITY

In Vitro
H$_2$O: $\geq$ 100 mg/mL (197.17 mM)
* "$\geq$" means soluble, but saturation unknown.

<table>
<thead>
<tr>
<th>Solvent</th>
<th>Mass</th>
<th>1 mg</th>
<th>5 mg</th>
<th>10 mg</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 mM</td>
<td></td>
<td>1.9717 mL</td>
<td>9.8584 mL</td>
<td>19.7169 mL</td>
</tr>
<tr>
<td>5 mM</td>
<td></td>
<td>0.3943 mL</td>
<td>1.9717 mL</td>
<td>3.9434 mL</td>
</tr>
<tr>
<td>10 mM</td>
<td></td>
<td>0.1972 mL</td>
<td>0.9858 mL</td>
<td>1.9717 mL</td>
</tr>
</tbody>
</table>

Preparing Stock Solutions

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 (197.17 mM); Clear solution; Need ultrasonic and warming and heat to 60°C

BIOLOGICAL ACTIVITY

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

IC$_{50}$ & Target
Human Endogenous Metabolite

In Vitro
ATP (5 mM; 1 hour) co-treatment with LPS (1 μg/mL) has a synergistic effect on the activation of the NLRP3 inflammasome in HGFs$^{[3]}$.
ATP (2 mM; 0.5-24 hours) induces secretion of IL-1β, KC and MIP-2 from BMDMs in a caspase-1 activation-dependent manner$^{[4]}$.
ATP promotes neutrophil chemotaxis in vitro$^{[4]}$. 
ATP (50 mg/kg; i.p.) protects mice against bacterial infection in vivo\(^4\).
ATP induces the secretion of IL-1\(\beta\), KC and MIP-2 and neutrophils recruitment in vivo\(^4\).

In Vivo

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.

REFERENCES