# c-di-AMP disodium

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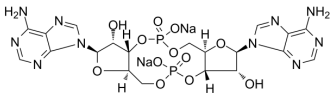
|---|---|
| **Cat. No.:** | HY-12326A |
| **CAS No.:** | 2734909-87-4 |
| **Molecular Formula:** | $C_{20}H_{22}N_{10}Na_2O_{12}P_2$ |
| **Molecular Weight:** | 702.38 |
| **Target:** | STING; Bacterial; Endogenous Metabolite |
| **Pathway:** | Immunology/Inflammation; Anti-infection; Metabolic Enzyme/Protease |
| **Storage:** | -80°C, protect from light, stored under nitrogen |



## SOLVENT & SOLUBILITY

**In Vitro**

DMSO : 270 mg/mL (384.41 mM; Need ultrasonic)

$H_2O$ : ≥ 50 mg/mL (71.19 mM)

* "≥" means soluble, but saturation unknown.

**Preparing Stock Solutions**

| Concentration \ Solvent, Mass | 1 mg | 5 mg | 10 mg |
|---|---|---|---|
| 1 mM | 1.4237 mL | 7.1187 mL | 14.2373 mL |
| 5 mM | 0.2847 mL | 1.4237 mL | 2.8475 mL |
| 10 mM | 0.1424 mL | 0.7119 mL | 1.4237 mL |

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

**In Vivo**

1. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 6.75 mg/mL (9.61 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 6.75 mg/mL (9.61 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 6.75 mg/mL (9.61 mM); Clear solution

## BIOLOGICAL ACTIVITY

**Description**

c-di-AMP (Cyclic diadenylate) sodium is a STING agonist, which binds to the transmembrane protein STING thereby activating the TBK3-IRF3 signaling pathway, subsequently triggering the production of type I IFN and TNF. c-di-AMP sodium is also a bacterial second messenger, which regulates cell growth, survival, and virulence, primarily within Gram-positive bacteria, and also regulates host immune response. c-di-AMP sodium acts as a potent mucosal adjuvant stimulating both humoral and cellular responses[1][2][3][4].

**$IC_{50}$ & Target**

STING[3]

| | |
|---|---|
| **In Vitro** | c-di-AMP (Cyclic diadenylate) sodium signaling is a central factor in many Gram-positive bacteria regulating cell wall synthesis, potassium ion channels, DNA repair, and biofilm formation. c-di-AMP sodium is also essential for cell growth, survival, and virulence of several well-known human pathogenic bacteria including S. aureus, L. monocytogenes, S. pyogenes, and Mycobacterium spp[1].<br>c-di-AMP sodium combines with model antigens, such as OVA or β-Gal, acts as a potent mucosal adjuvant stimulating both humoral and cellular responses[4].<br>MCE has not independently confirmed the accuracy of these methods. They are for reference only. |

## CUSTOMER VALIDATION

- Gut Microbes. 2022 Jan-Dec;14(1):2119055.
- Cell Death Dis. 2022 Jul 28;13(7):653.

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## REFERENCES


[1]. Fahmi T, et al. c-di-AMP: An Essential Molecule in the Signaling Pathways that Regulate the Viability and Virulenceof Gram-Positive Bacteria. Genes (Basel). 2017 Aug 7;8(8).

[2]. Ning H, et al. Recombinant BCG With Bacterial Signaling Molecule Cyclic di-AMP as Endogenous AdjuvantInduces Elevated Immune Responses After Mycobacterium tuberculosis Infection. Front Immunol. 2019 Jul 3;10:1519.

[3]. Ebensen T, et al. The Combination Vaccine Adjuvant System Alum/c-di-AMP Results in Quantitative and QualitativeEnhanced Immune Responses Post Immunization. Front Cell Infect Microbiol. 2019 Feb 19;9:31.

[4]. Sanchez MV, et al. Intranasal delivery of influenza rNP adjuvanted with c-di-AMP induces strong humoral and cellularimmune responses and provides protection against virus challenge. PLoS One. 2014 Aug 20;9(8):e104824.





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