

# c-di-AMP VacciGrade™

Cyclic diadenylate monophosphate: a STING ligand

Catalog # vac-nacda

For research use only. Not for use in humans.

Version # 15K27-MM

## PRODUCT INFORMATION

### Content:

- 1 mg of lyophilized c-di-AMP VacciGrade™
- 10 ml sterile endotoxin-free physiological water (NaCl 0.9%)

### Storage and stability:

- c-di-AMP VacciGrade™ is shipped at room temperature and should be stored at -20 °C. Lyophilized product is stable 1 year when properly stored.
- Upon resuspension, prepare aliquots of c-di-AMP VacciGrade™ and store at -20 °C. Resuspended product is stable 6 months when properly stored. Avoid repeated freeze-thaw cycles.

### Quality control:

- c-di-AMP VacciGrade™ is a preclinical grade preparation of the cyclic dinucleotide c-di-AMP. It is prepared under strict aseptic conditions and is tested for the presence of endotoxins. c-di-AMP VacciGrade™ is guaranteed sterile and its endotoxin level is <0.005 EU/μg.
- Purity and structure has been determined by LC/MS and NMR: ≥ 95%
- Biological activity has been assessed by measuring induction of the interferon pathway in cells.

## METHODS

### Preparation of sterile stock solution (1 mg/ml):

- Add 1 ml endotoxin-free physiological water to the 1 mg c-di-AMP VacciGrade™ vial to obtain a solution at 1 mg/ml.
- Mix the solution by pipetting up and down.

**Working Concentration:** 5-50 μg/mouse

## CHEMICAL PROPERTIES

**Synonym:** c-di-AMP sodium salt

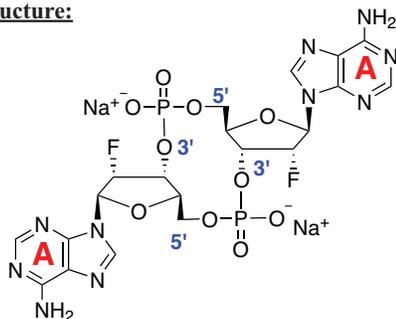
**CAS number:** 54447-84-6

**Formula:** C<sub>20</sub>H<sub>22</sub>N<sub>10</sub>O<sub>12</sub>P<sub>2</sub> · 2Na

**Molecular weight:** 702.38

**Solubility:** 50 mg/ml in physiological water

**Structure:**



## DESCRIPTION

Cyclic diadenylate monophosphate (c-di-AMP) is an intracellular signaling molecule produced by bacteria. Administration of c-di-AMP can induce a strong immune response *in vitro* and *in vivo*<sup>2</sup>. It was recently found that this cyclic dinucleotide induces the production of cytokines, such as type I interferons, through the STING/TBK1/IRF3 pathway<sup>1</sup>. Due to its immunostimulatory properties, this molecule has been investigated as a vaccine adjuvant. Mucosal delivery of c-di-AMP elicits a balanced Th1/Th2 profile and Th17 response<sup>2</sup>, which is crucial against intracellular pathogens. This adjuvant acts through the recruitment of monocytes and granulocytes, and the maturation of dendritic cells<sup>3</sup>.

**1. Burdette DL. et al., 2010.** STING is a direct innate immune sensor of cyclic di-GMP. *Nature*. 478(7370):515-8. **2. Ebsensen T. et al., 2011.** Bis-(3',5')-cyclic dimeric adenosine monophosphate: strong Th1/Th2/Th17 promoting mucosal adjuvant. *Vaccine*. 29(32):5210-20. **3. Karaolis DK. et al., 2007.** Bacterial c-di-GMP is an immunostimulatory molecule. *J Immunol*. 178:2171-81.

## RELATED PRODUCTS

| Product                    | Description                | Cat. Code   |
|----------------------------|----------------------------|-------------|
| 2'3'-cGAMP VacciGrade™     | STING ligand               | vac-nacga23 |
| AddaVax™                   | Squalene-Oil-in-water      | vac-adx-10  |
| Alhydrogel® 2%             | Al(OH) <sub>3</sub> gel    | vac-alu-250 |
| c-di-GMP VacciGrade™       | STING ligand               | vac-nacdg   |
| CFA                        | Complete Freund's adjuvant | vac-cfa-10  |
| EndoFit™ Ovalbumin         | For <i>in vivo</i> use     | vac-pova    |
| Flagellin FliC VacciGrade™ | TLR5 ligand                | vac-fla     |
| MPLAs VacciGrade™          | TLR4 ligand                | vac-mpls    |
| ODN 2006 VacciGrade™       | Human TLR9 ligand          | vac-2006-1  |
| Poly(I:C) VacciGrade™      | TLR3 ligand                | vac-pic     |

## TECHNICAL SUPPORT

InvivoGen USA (Toll-Free): 888-457-5873

InvivoGen USA (International): +1 (858) 457-5873

InvivoGen Europe: +33 (0) 5-62-71-69-39

InvivoGen Asia: +852 3-622-34-80

E-mail: [info@invivogen.com](mailto:info@invivogen.com)