Cyclic-di-GMP disodium

Cat. No.: HY-110382

CAS No.: 2222132-40-1

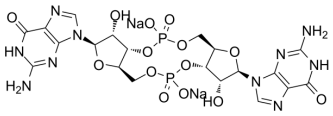
Molecular Formula: $C_{20}H_{22}N_{10}Na_2O_{14}P_2$

Molecular Weight: 734.37

Target: STING; Endogenous Metabolite

Pathway: Immunology/Inflammation; Metabolic Enzyme/Protease

Storage: -80°C, protect from light, stored under nitrogen



SOLVENT & SOLUBILITY

In Vitro

H_2O : 160 mg/mL (217.87 mM; Need ultrasonic)

Preparing Stock Solutions	Solvent / Mass / Concentration	1 mg	5 mg	10 mg
	1 mM	1.3617 mL	6.8086 mL	13.6171 mL
	5 mM	0.2723 mL	1.3617 mL	2.7234 mL
	10 mM	0.1362 mL	0.6809 mL	1.3617 mL

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

In Vivo

1. Add each solvent one by one: PBS
   Solubility: 50 mg/mL (68.09 mM); Clear solution; Need ultrasonic

BIOLOGICAL ACTIVITY

Description

Cyclic-di-GMP disodium is a STING agonist and a bacterial second messenger that coordinates different aspects of bacterial growth and behavior, including motility, virulence, biofilm formation, and cell cycle progression. Cyclic-di-GMP disodium has anti-cancer cell proliferation activity and also induces elevated CD4 receptor expression and cell cycle arrest. Cyclic-di-GMP disodium can be used in cancer research[1][2][3][4].

IC_{50} & Target

STING[1][2][3][4].

In Vitro

Cyclic-di-GMP disodium (0.5-50 μM; 5 days) inhibits proliferation of human colon cancer cells[1].
?Cyclic-di-GMP disodium (0.5-50 μM; 5 days) specifically elevates CD4 expression in Jurkat cells[2].
?Cyclic-di-GMP disodium (0.5-50 μM; 5 days) induces cell cycle arrest at the S-phase in Jurkat cells[2].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Cell Proliferation Assay[1]

Cell Line:	H508 cells
Concentration:	0.5-50 μM
Incubation Time:	5 days
Result:	Reduced basal H508 cell proliferation by approx 15%, even inhibited acetylcholine- and EGF-induced cell proliferation.

Cell Viability Assay[2]

Cell Line:	Jurkat cells
Concentration:	50 μM
Incubation Time:	24 h
Result:	Specifically induced of CD4 (no effect on the expression of CD8), with a 6.3-fold upregulation over control and in a dose-dependent manner.

Cell Cycle Analysis[2]

Cell Line:	Jurkat cells
Concentration:	50 μM
Incubation Time:	24 h
Result:	Increased the percentage of cells in S-phase by 79%, with almost complete disappearance of G2/M-phase cells which decreased by 93%.

In Vivo

Cyclic-di-GMP disodium (100 μg/per; i.v.; two sequential vaccinations 9 days apart) enhances TriVax-induced immune responses to melanoma in mice and further increased the anti-tumor effects of TriVax[3].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Animal Model:	C57BL/6 (B6) mice (8- to 10-week-old)[3].
Dosage:	100 μg/per
Administration:	Intravenous injection; two sequential vaccinations 9 days apart; combine with TriVax.
Result:	Significantly higher numbers of antigen-specific CD8 T cells when combined with TriVax. (TriVax consisted of a mixture of 120 μg Pam-hgp100, 100 μg hgp100 or 100 μg Ova, 50 or 25 μg anti-CD40 antibody, and 25 μg Poly-IC). Enhanced the anti-tumor activity of TriVax.

CUSTOMER VALIDATION

- Gut Microbes. 2022 Jan-Dec;14(1):2119055.
- Mbio. 2021 Oct 26;12(5):e0119221.

See more customer validations on www.MedChemExpress.com

REFERENCES

[1]. Karaolis DK, et al. 3',5'-Cyclic diguanylic acid (c-di-GMP) inhibits basal and growth factor-stimulated human colon cancer cell proliferation. Biochem Biophys Res Commun. 2005 Apr 1;329(1):40-5.

[2]. Steinberger O, et al. Elevated expression of the CD4 receptor and cell cycle arrest are induced in Jurkat cells by treatment with the novel cyclic dinucleotide 3',5'-cyclic diguanylic acid. FEBS Lett. 1999 Feb 5;444(1):125-9.

[3]. Wang Z, et al. STING activator c-di-GMP enhances the anti-tumor effects of peptide vaccines in melanoma-bearing mice. Cancer Immunol Immunother. 2015 Aug;64(8):1057-66.

[4]. Jenal U, et al. Cyclic di-GMP: second messenger extraordinaire. Nat Rev Microbiol. 2017 May;15(5):271-284.

Caution: Product has not been fully validated for medical applications. For research use only.

Tel: 609-228-6898 Fax: 609-228-5909 E-mail: tech@MedChemExpress.com

Address: 1 Deer Park Dr, Suite Q, Monmouth Junction, NJ 08852, USA