
Product Data Sheet

Product Name: ddATP trisodium

Cat. No.: GC68952

Chemical Properties

Cas. No. 72029-21-1

Formula $C_{10}H_{13}N_5Na_3O_{11}P_3$

M.Wt 541.13

Solubility H_2O : 125 mg/mL (231.00 mM; Need ultrasonic)

Storage Solution, -20°C, 2 years

General tips For obtaining a higher solubility , please warm the tube at 37 °C and shake it in the ultrasonic bath for a while. Stock solution can be stored below -20°C for several months.

Shipping Condition Evaluation sample solution : ship with blue ice All other available size: ship with RT , or blue ice upon request.

Structure **Protocol****Cell experiment [1]:**

Cell lines

MII oocytes

Preparation Method

Treating oocytes with 100μM ddATP trisodium for 5 hours and inducing nuclear DNA double-strand breaks with 0.5μM bleomycin for 1 hour.

Reaction Conditions

100μM; 5h.

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

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Applications

ddATP trisodium can effectively inhibit mitochondrial DNA (mtDNA) replication in oocytes and reduce γ H2AX foci in oocytes.

References:

[1] Ma JY, Feng X, Xie FY, et al. Double-strand breaks induce short-scale DNA replication and damage amplification in the fully grown mouse oocytes. *Genetics*. 2021 Jun 24;218(2):iyab054.

Background

ddATP trisodium is a nucleotide analog used in molecular biology and biochemistry, primarily for DNA sequencing and polymerase chain reactions (PCR)^[1]. ddATP trisodium is a modified nucleotide analog in which the 3'-hydroxyl group of the 2'-deoxyribose sugar is replaced by a hydrogen atom^[2]. This modification prevents the formation of phosphodiester bonds during DNA synthesis, thereby effectively terminating the elongation of the DNA chain^[3]. Some studies also suggest that ddATP trisodium can inhibit viral replication^[4].

In vitro, treating oocytes with 100 μ M ddATP trisodium for 5 hours and inducing nuclear DNA double-strand breaks with 0.5 μ M bleomycin for 1 hour, ddATP trisodium can effectively inhibit mitochondrial DNA (mtDNA) replication in oocytes and reduce γ H2AX foci in oocytes^[5]. Additionally, studies have found that ddATP trisodium (at concentrations of 1, 2, 4, and 8 μ mol/mL) can synergistically inhibit the growth of *Corynebacterium pseudotuberculosis* with penicillin and decrease the minimum inhibitory concentration (MIC) of penicillin against *Corynebacterium pseudotuberculosis*^[6].

References:

[1] Green MR, Sambrook J. Labeling the 3' Termini of Oligonucleotides Using Terminal Deoxynucleotidyl Transferase. *Cold Spring Harb Protoc*. 2021 Aug 2;2021(8).

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- [2] Perry CM, Noble S. Didanosine: an updated review of its use in HIV infection. *Drugs*. 1999 Dec;58(6):1099-135.
- [3] Yousaf SI, Carroll AR, Clarke BE. A new and improved method for 3'-end labelling DNA using [α - 32 P]ddATP. *Gene*. 1984 Mar;27(3):309-13.
- [4] Cronn RC, Remington KM, Preston BD, et al. Inhibition of reverse transcriptase from feline immunodeficiency virus by analogs of 2'-deoxyadenosine-5'-triphosphate. *Biochem Pharmacol*. 1992 Oct 6;44(7):1375-81.
- [5] Ma JY, Feng X, Xie FY, et al. Double-strand breaks induce short-scale DNA replication and damage amplification in the fully grown mouse oocytes. *Genetics*. 2021 Jun 24;218(2):iyab054.
- [6] Bernardino PN, de Paula CL, Pereira AFM, et al. Potential in vitro action of an adenosine analog and synergism with penicillin against *Corynebacterium pseudotuberculosis*. *Braz J Microbiol*. 2023 Mar;54(1):559-563.

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