

Product Data Sheet

Product Name: Cyclic AMP

Cat. No.: GC19626

Chemical Properties

Cas. No. 60-92-4

SMILES O[C@H]1[C@H](N2C=NC3=C2N=CN=C3N)O[C@@]4([H])[C@@]1([H])OP(OC4)(O)=O

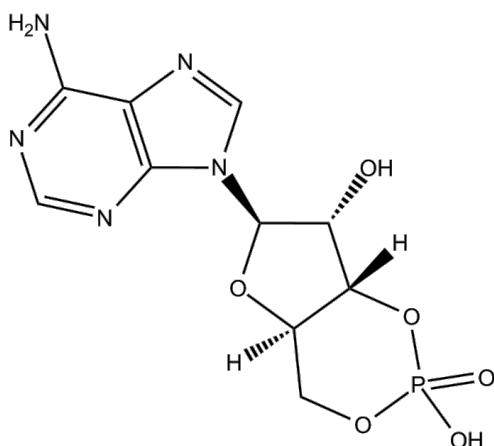
Formula $C_{10}H_{12}N_5O_6P$ M.Wt 329.21

Solubility insoluble in DMSO; insoluble in EtOH; 11mg/mL in Water Storage Store at -20°C

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



Background

Cyclic AMP (cAMP) is a derivative of adenosine triphosphate and is the first identified second messenger that transmits signals from receptors to downstream pathways^[1]. As an important intracellular signaling molecule, cyclic AMP participates in many biological processes, such as

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metabolic regulation, protein kinase activation, gene transcription, etc.[2, 3]. Cyclic AMP is produced from ATP by several adenylate cyclases and anchored in various locations inside the cell. These enzymes are regulated by G protein-coupled receptors [4]. Cyclic AMP is broken down into adenosine monophosphate (AMP) by phosphodiesterases [5]. Cyclic AMP is a hydrophilic small molecule that contains a phosphate group, has high polarity, and can form hydrogen bonds with water molecules [6].

References:

- [1] Muthal A P, Kulkarni R, Kumar D, et al. Cyclic adenosine monophosphate: Recent and future perspectives on various diseases[J]. Journal of Applied Pharmaceutical Science, 2022, 12(3): 001-015.
- [2] Rutter G A, da Silva Xavier G, Leclerc I. Roles of 5'-AMP-activated protein kinase (AMPK) in mammalian glucose homeostasis[J]. Biochemical Journal, 2003, 375(1): 1-16.
- [3] De Cesare D, Sassone-Corsi P. Transcriptional regulation by cyclic AMP-responsive factors[J]. 2000.
- [4] Kuhn M. Molecular physiology of membrane guanylyl cyclase receptors[J]. Physiological reviews, 2016.
- [5] Pyne N J, Furman B L. Cyclic nucleotide phosphodiesterases in pancreatic islets[J]. Diabetologia, 2003, 46: 1179-1189.
- [6] Kato Y, Conn M M, Rebek J J. Water-soluble receptors for cyclic-AMP and their use for evaluating phosphate-guanidinium interactions[J]. Journal of the American Chemical Society, 1994, 116(8): 3279-3284.

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