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Dibutyryl-cAMP

cAMP pathway activator; Activates cAMP-dependent protein kinases

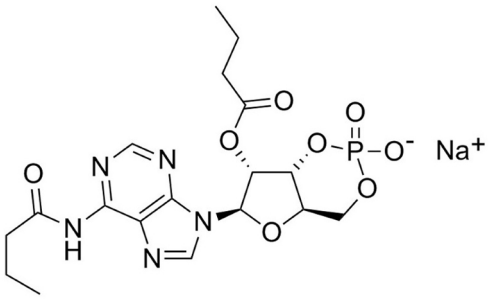
Catalog #73882	25 mg
Catalog #73884	100 mg
Catalog #73886	250 mg
Catalog #100-0244	500 mg

Product Description

Dibutyryl-cAMP is a cell-permeable cyclic AMP (cAMP) analog that activates cAMP-dependent protein kinases (Schwede et al.). This product is supplied as the sodium salt of the molecule.

Molecular Name:	Dibutyryl-cAMP (Sodium Salt)
Alternative Names:	Bucladesine; DC 2797
CAS Number:	16980-89-5
Chemical Formula:	$C_{18}H_{23}N_5O_8P \cdot Na$
Molecular Weight:	491.4 g/mol
Purity:	≥ 95%
Chemical Name:	N-(1-oxobutyl)-cyclic 3',5'-(hydrogen phosphate) 2'-butanoate-adenosine, monosodium salt

Structure:



Properties

Product Format: A crystalline solid

Stability and Storage: Product stable at -20°C as supplied. Protect product from prolonged exposure to light. For long-term storage, store with a desiccant.
Stable as supplied for 12 months from date of receipt.

Preparation:

- Water ≤ 100 mM
- DMSO ≤ 100 mM

For example, to prepare a 10 mM stock solution in water, resuspend 10 mg in 2.04 mL of water.

Prepare stock solution fresh before use. Information regarding stability of small molecules in solution has rarely been reported; however, as a general guide we recommend storage in water or DMSO at -20°C. Aliquot into working volumes to avoid repeated freeze-thaw cycles. The effect of storage of stock solution on compound performance should be tested for each application.

For use as a cell culture supplement, stock solution should be diluted into culture medium immediately before use. Avoid final DMSO concentration above 0.1% due to potential cell toxicity.

Published Applications

DIFFERENTIATION

- Suppresses experimental autoimmune encephalomyelitis development by reducing demyelination and mobilizing neural stem cells in the subventricular zone toward the demyelinated plaques (Khezri et al.).
- Induces intrinsic axon growth in peripheral and central nervous systems, and morphological differentiation of astrocytes (Imamura & Ozawa; Knott et al.).
- Stimulates neurite outgrowth in PC12 cells (Maruoka et al.).

References

Imamura M & Ozawa E. (1998) Differential expression of dystrophin isoforms and utrophin during dibutyryl-cAMP-induced morphological differentiation of rat brain astrocytes. Proc Natl Acad Sci USA 95(11): 6139–44.

Khezri S et al. (2013) Dibutyryl cyclic AMP inhibits the progression of experimental autoimmune encephalomyelitis and potentiates recruitment of endogenous neural stem cells. J Mol Neurosci 51(2): 298–306.

Knott EP et al. (2014) Cyclic AMP signaling: a molecular determinant of peripheral nerve regeneration. Biomed Res Int 2014: 651625.

Maruoka H et al. (2010) Dibutyryl-cAMP up-regulates nur77 expression via histone modification during neurite outgrowth in PC12 cells. J Biochem 148(1): 93–101.

Schwede F et al. (2000) Cyclic nucleotide analogs as biochemical tools and prospective drugs. Pharmacol Ther 87(2–3): 199–226.

Related Products

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