Small Molecules

Dibutyryl-cAMP

cAMP pathway activator; Activates cAMP-dependent protein kinases

Catalog #	73882	25 mg
	73884	100 mg
	73886	250 mg

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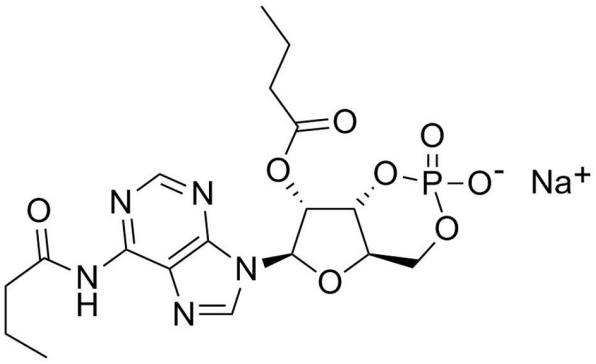
Product Description

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

Physical Appearance: A crystalline solid

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.

Solubility:
· PBS ≤ 6.5 mM
· Absolute ethanol ≤ 2 mM
For example, to prepare a 5 mM stock solution in PBS, resuspend 10 mg in 4.07 mL of PBS.

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 absolute ethanol. 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 ethanol 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.

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