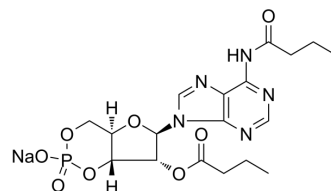


Bucladesine sodium

| | |
|--------------------|--|
| Cat. No.: | HY-B0764 |
| CAS No.: | 16980-89-5 |
| Molecular Formula: | C ₁₈ H ₂₃ N ₅ NaO ₈ P |
| Molecular Weight: | 491.37 |
| Target: | PKA; Phosphodiesterase (PDE) |
| Pathway: | Stem Cell/Wnt; TGF-beta/Smad; Metabolic Enzyme/Protease |
| Storage: | 4°C, sealed storage, away from moisture * In solvent : -80°C, 6 months; -20°C, 1 month (sealed storage, away from moisture) |



SOLVENT & SOLUBILITY

In Vitro

DMSO : 100 mg/mL (203.51 mM; Need ultrasonic)
 H₂O : ≥ 50 mg/mL (101.76 mM)
 * "≥" means soluble, but saturation unknown.

| Preparing Stock Solutions | Solvent Concentration | Mass | | |
|---------------------------|-----------------------|-----------|------------|------------|
| | | 1 mg | 5 mg | 10 mg |
| | 1 mM | 2.0351 mL | 10.1756 mL | 20.3513 mL |
| | 5 mM | 0.4070 mL | 2.0351 mL | 4.0703 mL |
| | 10 mM | 0.2035 mL | 1.0176 mL | 2.0351 mL |

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

In Vivo

- Add each solvent one by one: PBS
Solubility: 100 mg/mL (203.51 mM); Clear solution; Need ultrasonic
- Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
Solubility: ≥ 4.25 mg/mL (8.65 mM); Clear solution
- Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
Solubility: ≥ 4.25 mg/mL (8.65 mM); Clear solution
- Add each solvent one by one: 10% DMSO >> 90% corn oil
Solubility: ≥ 4.25 mg/mL (8.65 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Bucladesine sodium salt (Dibutyryl-cAMP sodium salt) is a stabilized cyclic AMP (cAMP) analog and a selective PKA activator. Bucladesine sodium salt raises the intracellular levels of cAMP. Bucladesine sodium salt is also a phosphodiesterase (PDE) inhibitor. Bucladesine sodium salt has anti-inflammatory activity and can be used for impaired wound healing^{[1][2][3][4]}.

IC₅₀ & Target

| | |
|-----|-----|
| PKA | PDE |
|-----|-----|

| | |
|-----------------|---|
| In Vitro | Both choline acetyltransferase (ChAT) and vesicular acetylcholine transporter (VACHT) mRNA increased approximately fourfold after treatment of PC12 cells with Bucladesine (dibutyryl cyclic AMP; dbcAMP). ChAT and PKA activity are also increased by Bucladesine ^[5] . MCE has not independently confirmed the accuracy of these methods. They are for reference only. |
| In Vivo | Intrahippocampal infusion of Bucladesine into the CA1 region (male Albino-Wistar rats) can cause an improvement in spatial memory in maze task. Bilateral infusion of 10 μ M and 100 μ M Bucladesine leads to a significant reduction in escape latency and travel distance (showing an improvement in spatial memory). Bucladesine via activation of PKA and induction of cAMP/PKA pathway improved spatial memory retention ^[1] . MCE has not independently confirmed the accuracy of these methods. They are for reference only. |

CUSTOMER VALIDATION

- Cell Stem Cell. 2021 Aug 5;28(8):1362-1379.e7.
- Adv Sci (Weinh). 2021 Oct 31;e2100808.
- Cell Commun Signal. 2022 Apr 12;20(1):52.
- Ecotoxicol Environ Saf. 2022 Aug 17;243:113982.
- Int J Mol Sci. 2023 Feb 8;24(4):3398.

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REFERENCES

- [1]. Sharifzadeh, M., et al., Post-training intrahippocampal infusion of nicotine-bucladesine combination causes a synergistic enhancement effect on spatial memory retention in rats. *Eur J Pharmacol*, 2007. 562(3): p. 212-20.
- [2]. Mafune, E., M. Takahashi, and N. Takasugi, Effect of vehicles on percutaneous absorption of bucladesine (dibutyryl cyclic AMP) in normal and damaged rat skin. *Biol Pharm Bull*, 1995. 18(11): p. 1539-43.
- [3]. Rundfeldt, C., et al., The stable cyclic adenosine monophosphate analogue, dibutyryl cyclo-adenosine monophosphate (bucladesine), is active in a model of acute skin inflammation. *Arch Dermatol Res*, 2012.
- [4]. Salehi F, et al. Effect of bucladesine, pentoxifylline, and H-89 as cyclic adenosine monophosphate analog, phosphodiesterase, and protein kinase A inhibitor on acute pain. *Fundam Clin Pharmacol*. 2017 Aug;31(4):411-419.
- [5]. Shimojo M, et al. The cholinergic gene locus is coordinately regulated by protein kinase A II in PC12 cells. *J Neurochem*. 1998 Sep;71(3):1118-26.

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

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