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Quellenstraße 110, A-1100 Wien

T. +43(0)1 489 3961-0

F. +43(0)1 489 3961-7

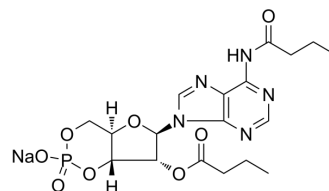
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## Bucladesine sodium

<b>Cat. No.:</b>	HY-B0764
<b>CAS No.:</b>	16980-89-5
<b>Molecular Formula:</b>	C <sub>18</sub> H <sub>23</sub> N <sub>5</sub> NaO <sub>8</sub> P
<b>Molecular Weight:</b>	491.37
<b>Target:</b>	PKA; Phosphodiesterase (PDE)
<b>Pathway:</b>	Stem Cell/Wnt; TGF-beta/Smad; Metabolic Enzyme/Protease
<b>Storage:</b>	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)  
 H<sub>2</sub>O : ≥ 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<sup>[1][2][3][4]</sup>.

#### IC<sub>50</sub> & Target

PKA	PDE
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<b>In Vitro</b>	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 <sup>[5]</sup> . MCE has not independently confirmed the accuracy of these methods. They are for reference only.
<b>In Vivo</b>	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 $\mu$ M and 100 $\mu$ 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 <sup>[1]</sup> . 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.**

Tel: 609-228-6898

Fax: 609-228-5909

E-mail: [tech@MedChemExpress.com](mailto:tech@MedChemExpress.com)

Address: 1 Deer Park Dr, Suite Q, Monmouth Junction, NJ 08852, USA