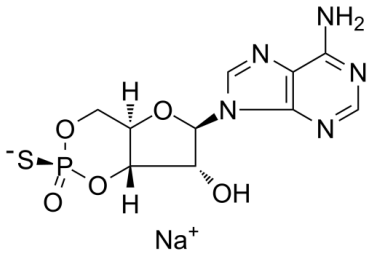
Data Sheet

Product Name:	Sp-cAMPS (sodium salt)
Cat. No.:	CS-0107086
CAS No.:	142439-95-0
Molecular Formula:	$C_{10}H_{11}N_5NaO_5PS$
Molecular Weight:	367.25
Target:	Phosphodiesterase (PDE); PKA
Pathway:	Metabolic Enzyme/Protease; Stem Cell/Wnt
Solubility:	DMSO : 100 mg/mL (272.29 mM; Need ultrasonic)



BIOLOGICAL ACTIVITY:

Sp-cAMPS sodium salt, a cAMP analog, is potent activator of cAMP-dependent **PKA I** and **PKA II**. Sp-cAMPS sodium salt is also a potent, competitive **phosphodiesterase (PDE3A)** inhibitor with a K_i of 47.6 μM. Sp-cAMPS sodium salt binds the **PDE10 GAF domain** with an EC_{50} of 40 μM[1][2][3]. **In Vitro:** Treatment of hepatocytes with Sp-cAMPS, the stimulatory diastereomer of adenosine cyclic 3',5'-phosphorothioate, mimics the response seen with glucagon. The glucagon-stimulated increases in the level of Ca^{2+} can be mimicked by Sp-cAMPS[4]. **In Vivo:** In chronic alcohol consumption (CAC) mice, direct infusion of the Sp-cAMPS (1 μg/μL) into the prefrontal cortex significantly improves or impairs, respectively, working memory performance in withdrawn and water animals[5].

References:

[1]. Su H Hung, et al. A new nonhydrolyzable reactive cAMP analog, (Sp)-adenosine-3',5'-cyclic-S-(4-bromo-2,3-dioxobutyl)monophosphorothioate irreversibly inactivates human platelet cGMP-inhibited cAMP phosphodiesterase. Bioorg Chem. 2002 Feb;30(1):16-31.

[2]. L Y Wang, et al. Regulation of kainate receptors by cAMP-dependent protein kinase and phosphatases. Science. 1991 Sep 6;253(5024):1132-5.

[3]. Ronald Jäger, et al. Activation of PDE10 and PDE11 phosphodiesterases. J Biol Chem. 2012 Jan 6;287(2):1210-9.

[4]. P A Connelly,et al. A study of the mechanism of glucagon-induced protein phosphorylation in isolated rat hepatocytes using (Sp)-cAMPS and (Rp)-cAMPS, the stimulatory and inhibitory diastereomers of adenosine cyclic 3',5'-phosphorothioate. J Biol Chem. 1987 Mar 25;262(9):4324-32.

[5]. G Dominguez, et al. Rescuing prefrontal cAMP-CREB pathway reverses working memory deficits during withdrawal from prolonged alcohol exposure. Brain Struct Funct. 2016 Mar;221(2):865-77.

CAIndexNames:

Adenosine, cyclic 3',5'-[hydrogen [P(S)]-phosphorothioate], sodium salt (1:1)

SMILES:

O[C@H]1[C@@H](O[C@@]2([H])[C@@]1([H])O[P@](OC2)([S])=O)N3C4=C(C(N)=NC=N4)N=C3.[Na+].[-]

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

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