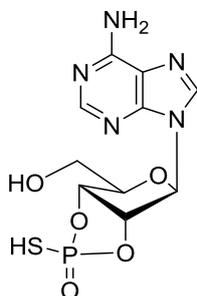


Technical Information about Sp-/exo- 2',3'-cAMPS

Tool for research on stereochemical requirements of 2',3'-cAMP binding receptors

Update: May 28, 2018 HU



Abbreviation: Sp-/exo-2',3'-cAMPS

Formula	CAS No.	Molecular Weight	UV	BIOLOG Cat. No.
C ₁₀ H ₁₁ N ₅ O ₅ PS·Na	[118276-00-9]	367.3	λ _{max} 259 nm / ε 15200 / pH7	A 024

Name: Adenosine- 2', 3'- monophosphorothioate, Sp- or exo- isomer (Sp-2',3'-cAMPS)

Description: Sp-2',3'-cAMPS is an analogue of 2',3'-cyclic AMP where one of two exocyclic oxygen atoms (exo position) in the cyclic phosphate moiety is replaced by sulfur. The suffix "p" indicates that R/S nomenclature refers to phosphorus.

Properties: Sp-2',3'-cAMPS and its corresponding Rp-isomer (Rp-2',3'-cAMPS, Cat. No. A 006) are valuable tools for determination of the stereochemical requirements of 2',3'-cAMP binding receptors. Depending on the type of receptor they could behave as agonists or inhibitors of the binding site. Often phosphorothioate-modified nucleotides are more stable against metabolic degradation compared to their sulfur-free parent structures. Sp-2',3'-cAMPS is hydrolyzed by 2',3'-cyclic nucleotide 3'-phosphodiesterase from bovine brain, while Rp-2',3'-cAMPS is stable. Sp-2',3'-cAMPS shows a chemical shift of approx. 78 ppm in ³¹P-NMR.

Specification: Crystallized or lyophilized sodium salt. Please keep in mind that equal amounts of the compound may look different in volume depending on humidity. The compound can even contract to small volume droplets. Normally the product is located in the conical bottom of the tube. Micromolar quantities are determined by UV at λ_{max}. Other salt forms of Sp-2',3'-cAMPS are available upon request.

Purity: Typical analysis is better than 97% (HPLC / UV / 258 nm). The product is not sterile and has not been tested for endotoxins.

Solubility: Sp-2',3'-cAMPS has good solubility in water or buffer for most applications. When opening the tube make sure that no substance is lost within the cap. Please rinse tube walls carefully and preferably use ultrasonic or vortex to achieve total and uniform mixing.

Stability and Storage: Sp-2',3'-cAMPS has sufficient stability at room temperature and does not need special care during handling or shipment. Nevertheless, we recommend that the compound should be stored in the freezer, for longer storage periods preferably in freeze-dried form.

Toxicity and Safety: Since nucleotides have multiple tasks in every organism it is very likely that corresponding analogues will interfere with many cell regulation processes *in vivo*. However, due to the rather small quantities to work with no health hazards have been reported. Nevertheless please keep in mind that the *in vivo* properties of this compounds are not sufficiently characterized up to now. Avoid skin contact or ingestion and allow only trained personnel to handle the product.

Our products are designed, developed and sold for research purposes only. They are intended for *in vitro* and nonhuman *in vivo* laboratory applications. Any other use requires approval of health authorities.

Not for drug, household or related uses!

Selected References for cyclic 2',3'-phosphorothioates:

Heaton, P.A.; Eckstein, F., *Nucl. Acid Res.*, **24**, 850 - 853 (1996): "Diastereomeric Specificity of 2',3'-cyclic nucleotide 3'-phosphodiesterase"

Lowe, G.; Thelin, M., *J. Chem. Soc., Chem. Commun.*, 1947 - 1948 (1994): "The Stereochemical Course of Substitution of Sulfur by Oxygen Nucleophiles in Five-membered Cyclic Phosphorothioates"

Zegers, I.; Haikal, A.F.; Palmer, R.; Wyns, L., *J. Biol. Chem.*, **269**, 127 - 133 (1994): "Crystal Structure of Rnase T1 with 3'-Guanylic Acid and Guanosine"

Eckstein, F., *Acc. Chem. Res.*, **12**, 204 - 210 (1979): "Phosphorothioate Analogues of Nucleotides"

Eckstein, F.; Schulz, H.H.; Rüterjans, H.; Haar, W.; Maurer, W., *Biochemistry* **11**, 3507 - 3512 (1972): "Stereochemistry of the Transesterification Step of Ribonuclease T1"

Eckstein, F., *J. Am. Chem. Soc.*, **92**, 4718 - 4723 (1970): "Nucleoside Phosphorothioates"

Saenger, W.; Eckstein, F., *J. Am. Chem. Soc.*, **92**, 4712 - 4718 (1970): "Stereochemistry of a Substrate for Pancreatic Ribonuclease. Crystal and Molecular Structure of the Triethylammonium Salt of Uridine 2',3'-O,O-cyclophosphorothioate"

Eckstein, F.; *FEBS Lett.*, **2**, 85 - 86 (1968): "Uridine 2',3'-O,O-cyclophosphorothioate as Substrate for Pancreatic Ribonuclease (I)"