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# Technical Information about Sp-8-BnT-cAMPS

**Potent and selective activator of Epac2 with reduced potency to activate PKA**

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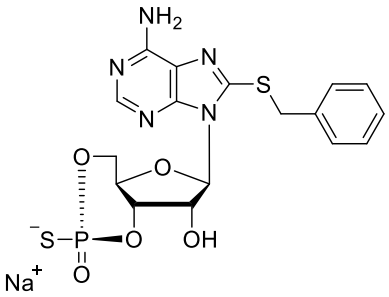

**Abbreviation:** **Sp-8-BnT-cAMPS**

| Formula | CAS No. | Molecular Weight | UV | BIOLOG Cat.No. |
|---|---|---|---|---|
| $C_{17}H_{17}N_5O_5PS_2{\cdot}Na$ | [2095467-79-9] | 489.5 | $\lambda_{max}$ 283 nm / ε 17100 / pH 7 | B 046 |

**Name:** 8- Benzylthioadenosine- 3', 5'- cyclic monophosphorothioate, Sp- isomer / S-220

**Description:** Sp-8-BnT-cAMPS is an analogue of the natural signal molecule cyclic AMP in which the hydrogen in position 8 of the adenine nucleobase is replaced by the lipophilic benzylthio group. In addition, the axial one of the two exocyclic oxygen atoms in the cyclic phosphate moiety is modified by sulfur. The suffix "p" indicates that R/S nomenclature refers to phosphorus.

**Properties:** According to Schwede et al. (2015), Sp-8-BnT-cAMPS potently and selectively activates the exchange proteins activated directly by cyclic AMP (Epac) isoform Epac2 over Epac1 both *in vitro* and *in vivo* (*in vitro* $AC_{50}$ Epac2 = 0.1 µM (1.8 µM for cAMP) and rel. $k_{max}$ = 7.7 (1 for cAMP)). At concentrations of 25 to 100 µM, it was found to potentiate glucose-induced insulin secretion from primary human islets.
Sp-8-BnT-cAMPS also activates all isoforms of protein kinase A (PKA), though less efficiently than cAMP. For example, while selectively activating Epac2 in human osteosarcoma U2OS cell lines stably expressing Epac1 or Epac2, Sp-8-BnT-cAMPS does not activate PKA at 100 µM in this cellular system (Schwede et al. 2015).
BIOLOG also offers the Epac2 agonist Sp-8-BnT-2'-O-Me-cAMPS (Cat. No. B 056), which has reduced potency compared to Sp-8-BnT-cAMPS, but efficiently discriminates against PKA. The well-established Epac agonist 8-pCPT-2'-O-Me-cAMP (Cat. No. C 041), which selectively activates Epac1 over Epac2 (*in vitro* $AC_{50}$ Epac1 = 1.8 µM and rel. $k_{max}$ = 3.3; *in vitro* $AC_{50}$ Epac2 = 3.5 µM and rel. $k_{max}$ = 0.8 (Schwede et al. 2015)), is available as well.

**Specification:** Lyophilized or crystallized sodium salt. The free acid or other salt forms are available upon request. Equal concentrations of Sp-8-BnT-cAMPS can appear very different in volume due to sensitivity of the lyophilized form to 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 $\lambda_{max}$.

**Purity:** Typical analysis is better than 98% (HPLC / UV / 283 nm). The product is not sterile and has not been tested for endotoxins.

**Solubility:** Sp-8-BnT-cAMPS is soluble in water (≥ 19.2 mM, limits have not been determined). Please rinse tube walls carefully and preferably use ultrasonic or vortex to achieve total and uniform mixing. When opening the tube please make sure that no substance is lost within the cap.

**Stability and Storage:** Sp-8-BnT-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 cyclic AMP has multiple tasks in every organism it is very likely that lipophilic cAMP 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 these 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!**



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**Selected References for Sp-8-BnT-cAMPS:**

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