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# Technical Information about c[A(2',5')pS[Rp]-A(3',5')pS[Rp]]

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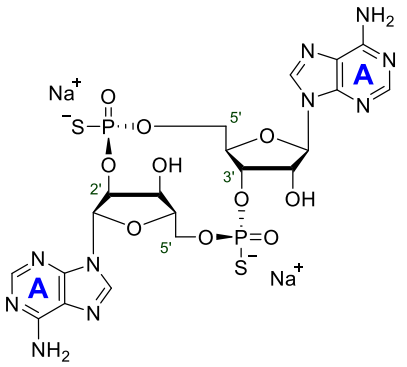

**Abbreviation:** **c[A(2',5')pS[Rp]-A(3',5')pS[Rp]]**

| Formula | CAS No. | Molecular Weight | UV | BIOLOG Cat. No. |
|---|---|---|---|---|
| $C_{20}H_{24}N_{10}O_{10}P_2S_2$ (for free acid) | [1638750-95-4] | 690.6 (for free acid) | $\lambda_{max}$ 259 nm / ε 27350 / pH 7 | C 224 |

**Name:** Cyclic (adenosine- (2' → 5')- monophosphorothioate[Rp]- adenosine- (3' → 5')- monophosphorothioate[Rp])
Syn.: Rp,Rp-2'3'-c-diAMPSS / Rp,Rp-2',5'-3',5'-c-diAMPSS / dithio-(Rp, Rp)-[cyclic[A(2',5')pA(3',5')p]] / ML RR-S2 CDA

**Description:** c[A(2',5')pS[Rp]-A(3',5')pS[Rp]] is the Rp,Rp-isomer of the di-thiophosphate analogue of c[A(2',5')pA(3',5')p] (2'3'-c-diAMP, BIOLOG Cat. No. C 187). In contrast to the bacterial second messenger c-diAMP (BIOLOG Cat. No. C 088), c[A(2',5')pS[Rp]-A(3',5')pS[Rp]] contains two distinct phosphodiester linkages similar to the metazoan second messenger c[G(2',5')pA(3',5')p] (2'3'-cGAMP, BIOLOG Cat. No. C 161).

**Properties:** c[A(2',5')pS[Rp]-A(3',5')pS[Rp]] is a synthetic cyclic dinucleotide with improved stability against degradation by phosphodiesterases. It has enhanced binding affinity to STING and activates mouse STING (mSTING) as well as all known human STING (hSTING) alleles. Compared to natural cyclic dinucleotides such as c-diGMP (BIOLOG Cat. No. C 057) or c[G(2',5')pA(3',5')p] (2'3'-cGAMP, BIOLOG Cat. No. C 161), c[A(2',5')pS[Rp]-A(3',5')pS[Rp]] shows higher potency in inducing interferons. In addition, it was found to generate anti-cancer effects in mouse models of solid tumors and acute myeloid leukemia (AML) (all data according to Corrales et al. (2015), Fu et al. (2015), Curran et al. (2016)).

**Specification:** Crystallized or lyophilized sodium salt. Other salt forms may be available upon request. Please keep in mind that equal amounts of the compound may look 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 95% (HPLC / UV / 259 nm). The product is not sterile and has not been tested for endotoxins.

**Solubility:** c[A(2',5')pS[Rp]-A(3',5')pS[Rp]] is soluble to ≥ 8 mM in water. 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:** c[A(2',5')pS[Rp]-A(3',5')pS[Rp]] 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:** Please keep in mind, that the *in vivo* properties of this compound 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 c[A(2',5')pS[Rp]-A(3',5')pS[Rp]]:**

Vyskocil, S. et.al., *J.Med.Chem*., **64**, 6902 – 6923 (2021): “Identification of Novel Carbocyclic Pyrimidine Cyclic Dinucleotide STING Agonists for Antitumor Immunotherapy Using Systemic Intravenous Route”

Curran, E.; Chen, X.; Corrales, L.; Kline, D.E.; Dubensky, T.W. Jr.; Duttagupta, P.; Kortylewski, M.; Kline, J., *Cell Rep.*, **15**, 2357 - 2366 (2016): "STING Pathway Activation Stimulates Potent Immunity against Acute Myeloid Leukemia"

Corrales, L.; Glickman, L.H.; McWhirter, S.M.; Kanne, D.B.; Sivick, K.E.; Katibah, G.E.; Woo, S.R.; Lemmens, E.; Banda, T.; Leong, J.J.; Metchette, K.; Dubensky, T.W. Jr; Gajewski, T.F., *Cell Rep.*, **11**, 1018 - 1030 (2015): "Direct Activation of STING in the Tumor Microenvironment Leads to Potent and Systemic Tumor Regression and Immunity"

Fu, J.; Kanne, D.B.; Leong, M.; Glickman, L.H.; McWhirter, S.M.; Lemmens, E.; Mechette, K.; Leong, J.J.; Lauer, P.; Liu, W.; Sivick, K.E.; Zeng, Q.; Soares, K.C.; Zheng, L.; Portnoy, D.A.; Woodward, J.J.; Pardoll, D.M.; Dubensky, T.W. Jr; Kim, Y., *Sci. Transl. Med.*, **7**, 283:283ra52 (2015): "STING Agonist Formulated Cancer Vaccines can Cure Established Tumors Resistant to PD-1 Blockade"



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