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Technical Information about Sp-8-pCPT-PET-cGMPS

Highly membrane-permeant, metabolically stable activator of cGMP-dependent protein kinases, but most probably inhibitor of the retinal cGMP-gated ion channel

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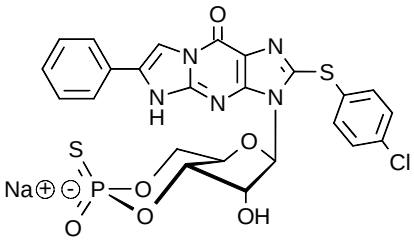

Abbreviation: **Sp-8-pCPT-PET-cGMPS**

Formula	CAS No.	Molecular Weight	UV	BIOLOG Cat. No.
$C_{24}H_{18}ClN_5O_6PS_2 \cdot Na$	[1262749-63-2]	626.0	λ_{max} 276 nm / ε 40000 / pH 7	C 047

Name: 8- (4- Chlorophenylthio)- ß- phenyl- 1, N^2- ethenoguanosine- 3', 5'- cyclic monophosphorothioate, Sp- isomer

Description: Sp-8-pCPT-PET-cGMPS is an analogue of the natural signal molecule cyclic GMP in which both, the amino group in position 2 and the nitrogen in position 1 are involved in a phenyl-substituted 5-membered ring system fused to the purine structure. The hydrogen in position 8 of the nucleobase is replaced by the lipophilic chlorophenylthio moiety.
In addition, the axial one of the two exocyclic oxygen atoms of the cyclic phosphate moiety is modified by sulfur (S-isomer, the suffix "p" indicates that R/S nomenclature refers to phosphorus).

Legal information: Protected under patents US 5,625,056 & DE 4217679 issued or licensed to BIOLOG LSI

Properties:

- **activator of protein kinase G type Iα and type Iß,**
- **most probably inhibitor of the retinal cGMP-gated ion channel,**
- **metabolic stability towards cyclic nucleotide-responsive phosphodiesterases due to phosphorothioate modification,**
- **high lipophilicity and good membrane permeability while still soluble in aqueous solvents.**

Sp-8-pCPT-PET-cGMPS is a potent, selective activator of cGMP-dependent protein kinases, but most probably inhibits the retinal cGMP-gated ion channel and thus can discriminate between both receptors. It is not metabolized by mammalian cyclic nucleotide-responsive phosphodiesterases. The additional hydrocarbon system as well as the substitution with the chlorophenylthio substituent result in considerably higher lipophilicity and membrane permeability compared to Sp-8-Br-PET-cGMPS (Cat. No. P 008).

Specification: Crystallized or lyophilized sodium salt. Other salts of Sp-8-pCPT-PET-cGMPS are available upon request. Please keep in mind that equal concentrations of the compound may look different in volume. Micro molar quantities are determined by UV at $\lambda_{max.}$

Purity: Typical analysis is better than 99% (HPLC / UV / 276 nm). The product is not sterile and has not been tested for endotoxins.

Solubility: Due to its increased lipophilicity the solubility of Sp-8-pCPT-PET-cGMPS in water or buffer is limited to approximately 2 mM. We suggest to use a small amount of organic solvent such as DMSO or DMF for dissolution and to dilute with water to the concentrations needed immediately before use. Please rinse tube walls carefully and preferably use ultrasonic or vortex to achieve total and uniform mixing. When opening the tube make sure that no substance is lost within the cap.

Stability and Storage: Sp-8-pCPT-PET-cGMPS is chemically stable under conditions of biological systems and media. Nevertheless solutions should be stored in the refrigerator and should be lyophilized and frozen for longer storage periods.

Toxicity and Safety: Since cyclic GMP has multiple tasks in every organism it is very likely that lipophilic cGMP analogs 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 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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References for Sp-8-pCPT-PET-cGMPS:

Jäger, R.; Russwurm, C.; Schwede, F.; Genieser, H.-G.; Koesling, D.; Russwurm, M., *J. Biol. Chem.*, **287**, 1210 – 1219 (2012): „ Activation of PDE10 and PDE11 Phosphodiesterases“

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