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

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

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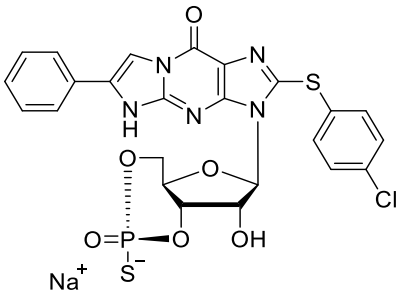

Abbreviation: **Rp-8-pCPT-PET-cGMPS**

Formula	CAS No.	Molecular Weight	UV	BIOLOG Cat. No.
$C_{24}H_{18}ClN_5O_6PS_2 \cdot Na$	[1262749-62-1]	626.0	λ_{max} 276 nm / ε 40000 / pH 7	C 046

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

Description: Rp-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 equatorial one of the two exocyclic oxygen atoms of the cyclic phosphate moiety is modified by sulfur (R-isomer, the suffix "p" indicates that R/S nomenclature refers to phosphorus).

Properties:

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

Rp-8-pCPT-PET-cGMPS is a potent, selective inhibitor of cGMP-dependent protein kinases and most probably inhibits the retinal cGMP-gated ion channel as well. 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 Rp-8-Br-PET-cGMPS (Cat. No. P 007).

Specification: Crystallized or lyophilized sodium salt. Other salts of Rp-8-pCPT-PET-cGMPS are available upon request. Please keep in mind that equal concentrations 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. 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.

Stability and Storage: Rp-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.

Solubility: Detailed information on the solubility of Rp-8-pCPT-PET-cGMPS in water and various buffers are listed in the solubility chart below. Concentrations have been tested at ambient temperature and can be considered as minimum concentrations usually obtainable. When opening the tube please 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.

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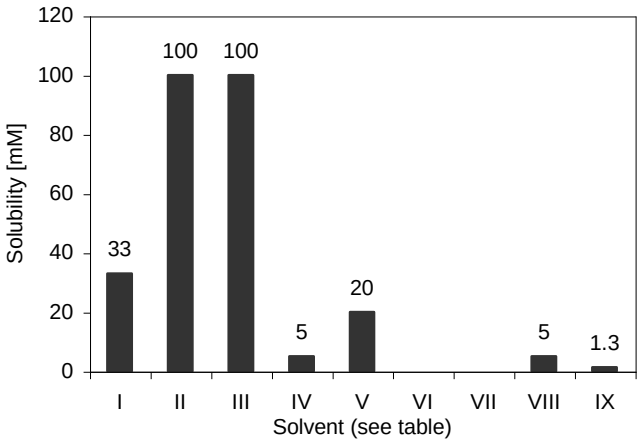
No.	Solvent	Solubility [mM]
I	H_2O	33
II	DMSO	100
III	DMF	100
IV	Ethanol 96%	5
V	Methanol	20
VI	PBS, pH 7.4	0
VII	100 mM Na_2HPO_4, pH 7.0	0
VIII	25 mM Hepes/NaOH, pH 7.2	5
IX	25 mMTris/HCl, pH 7.4	1.3



Toxicity and Safety: Since cyclic GMP has multiple tasks in every organism it is very likely that lipophilic cGMP 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 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!

Selected References for Rp-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“

Broderick, K.E.; Zhang, T.; Rangaswami, H.; Zeng, Y.; Zhao, X.; Boss, G.R.; Pilz, R.B., *Mol. Endocrinol.*, **21**, 1148 - 1162 (2007): "Guanosine 3',5'-cyclic monophosphate (cGMP)/cGMP-dependent Protein Kinase Induce Interleukin-6 Transcription in Osteoblasts"

Zhang, T.; Zhuang, S.; Casteel, D.E.; Looney, D.J.; Boss, G.R.; Pilz, R.B., *J. Biol. Chem.*, **282**, 33367 - 33380 (2007): "A Cysteine-rich LIM-only Protein Mediates Regulation of Smooth Muscle-specific Gene Expression by cGMP-dependent Protein Kinase"

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