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Technical Information about c-hexaAMP

Bacterial second messenger involved in the anti-viral defense in prokaryotes

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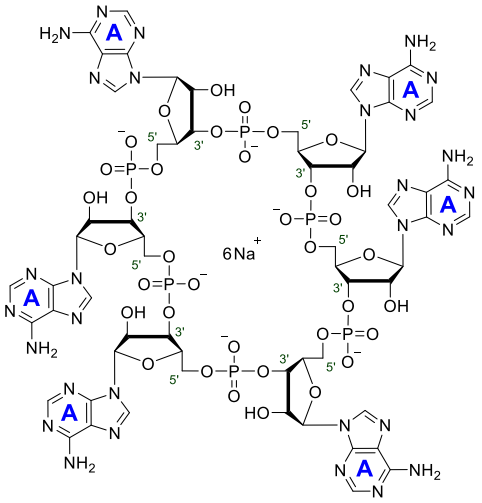

Abbreviation: **c-hexaAMP**

Formula	CAS No.	Molecular Weight	UV	BIOLOG Cat. No.
$C_{60}H_{72}N_{30}O_{36}P_6$ (free acid)	[232933-63-0]	1975.3 (free acid)	λ_{max} 259 nm / ε 81000 / pH 7	C 332

Name: Cyclic hexaadenosine monophosphate, sodium salt
Syn.: cyclic hexaadenylate / c-A6 / cA_6

Description: c-hexaAMP is a cyclic nucleotide in which six 5'-AMP units are interconnected via 3'-5' phosphodiester bonds to form a cyclic structure.

Properties: Cyclic oligoadenylates such as c-hexaAMP were found to be novel bacterial second messengers involved in the Type III CRISPR-Cas-associated detection and degradation of invasive genetic elements in many prokaryotes. Upon recognition and binding of invasive target RNA, the Cas10 subunit of the type III interference complex generates cyclic oligoadenylates which in turn act as allosteric activators of Csm6 ribonucleases that degrade invader-derived RNA transcripts. It is suggested that the size of the cyclic oligoadenylate depends on the type III CRISPR-Cas system present, with c-hexaAMP being the predominant signalling molecule in *Enterococcus italicus* and *Streptococcus thermophiles* (all data according to Niewoehner et al. (2017) and Kazlauskiene et al. (2017)).

Specification: Crystallized or lyophilized sodium salt. 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. Micromolar quantities are determined by UV at λ_{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-hexaAMP is soluble in water and aqueous buffers (≥ 4 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: c-hexaAMP 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-hexaAMP:

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Kazlauskiene, M.; Kostiuk, G.; Venclovas, Č.; Tamulaitis, G.; Siksnys, V., *Science*, **357**, 605 - 609 (2017): "A Cyclic Oligonucleotide Signaling Pathway in Type III CRISPR-Cas Systems"

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