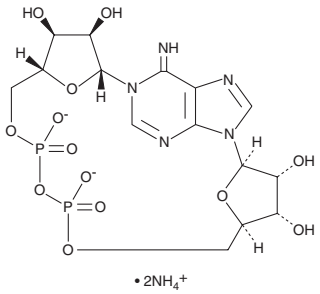
PRODUCT INFORMATION

Cyclic ADP-Ribose (ammonium salt)

Item No. 21417

Formal Name:	1-β-D-ribofuranosyl-adenosine 5'-(trihydrogen diphosphate), intramol. P',5''-ester, diammonium salt
Synonyms:	cADP-Ribose, cADPR
MF:	$C_{15}H_{19}N_5O_{13}P_2 \bullet 2NH_4$
FW:	575.4
Purity:	≥98%
Supplied as:	A solid
Storage:	-80°C
Stability:	≥2 years



Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Laboratory Procedures

Cyclic ADP-Ribose (cADP-ribose) (ammonium salt) is supplied as a solid. A stock solution may be made by dissolving the cADP-ribose (ammonium salt) in water. We do not recommend storing the aqueous solution for more than one day.

Description

cADP-Ribose is an endogenous metabolite of NAD^+ that mobilizes the release of stored Ca^{2+} in the endoplasmic reticulum *via* ryanodine receptors in various cell types.[1-5] This second messenger is generated *via* the cADP-ribose synthases CD38 and CD157.[3,5,6] cADP-Ribose may also trigger the cell surface Ca^{2+} influx channel TRPM2 in a temperature-dependent manner.[7] *In vitro*, cADP-ribose modulates Ca^{2+} signaling in rat and mouse cardiomyocytes treated with isoproterenol (Item No. 15592), and treatment with this metabolite at 100 µM under heat stress conditions induces the release of oxytocin (Item No. 11799) from the mouse hypothalamus.[4,6]

References

1. Lee, H.C., Walseth, T.F., Bratt, G.T., *et al.* Structural determination of a cyclic metabolite of NAD^+ with intracellular Ca^{2+}-mobilizing activity. *J. Biol. Chem.* **264(3)**, 1608-1615 (1989).
2. Guse, A.H. Biochemistry, biology, and pharmacology of cyclic adenosine diphosphoribose (cADPR). *Curr. Med. Chem.* **11**, 847-855 (2004).
3. Houtkooper, R.H., Cantó, C., Wanders, R.J., *et al.* The secret life of NAD^+: An old metabolite controlling new metabolic signaling pathways. *Endocr. Rev.* **31(2)**, 194-223 (2010).
4. Zhong, J., Amina, S., Liang, M., *et al.* Cyclic ADP-ribose and heat regulate oxytocin release *via* CD38 and TRPM2 in the hypothalamus during social or psychological stress in mice. *Front. Neurosci.* **10(304)**, 1-14 (2016).
5. Nikiforov, A., Kulikova, V., and Ziegler, M. The human NAD metabolome: Functions, metabolism and compartmentalization. *Crit. Rev. Biochem. Mol. Biol.* **50(4)**, 284-297 (2015).
6. Gul, R., Park, D.-R., Shawl, A.I., *et al.* Nicotinic acid adenine dinucleotide phosphate (NAADP) and cyclic ADP-ribose (cADPR) mediate Ca^{2+} signaling in cardiac hypertrophy induced by β-adrenergic stimulation. *PLoS One* **11(3)**, e0149125 (2016).
7. Lee, H.C. Cyclic ADP-ribose and nicotinic acid adenine dinucleotide phosphate (NAADP) as messengers for calcium mobilization. *J. Biol. Chem.* **287(38)**, 31633-31640 (2012).

CAYMAN CHEMICAL
1180 EAST ELLSWORTH RD
ANN ARBOR, MI 48108 · USA
PHONE: [800] 364-9897
[734] 971-3335
FAX: [734] 971-3640
CUSTSERV@CAYMANCHEM.COM
WWW.CAYMANCHEM.COM