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Cyclic ADP-ribose ammonium

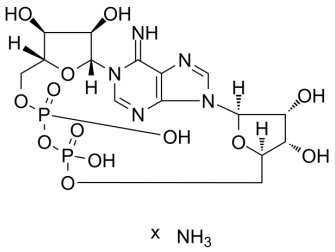
Cat. No.: HY-N7395A

Molecular Formula: $C_{15}H_{21}N_5O_{13}P_2.xNH_3$

Target: Calcium Channel; TRP Channel; Endogenous Metabolite

Pathway: Membrane Transporter/Ion Channel; Neuronal Signaling; Metabolic Enzyme/Protease

Storage: -20°C, sealed storage, away from moisture
* In solvent : -80°C, 6 months; -20°C, 1 month (sealed storage, away from moisture)



BIOLOGICAL ACTIVITY

Description	Cyclic ADP-ribose ammonium (cADPR ammonium) is a potent second messenger for calcium mobilization that is synthesized from NAD^+ by an ADP-ribosyl cyclase. Cyclic ADP-ribose ammonium increases cytosolic calcium mainly by Ryanodine receptor-mediated release from endoplasmic reticulum and also by extracellular influx through the opening of TRPM2 channels[1][2][3].
IC_{50} & Target	Calcium mobilization[1] TRPM2 channels[3] Endogenous metabolite[1]
In Vitro	cADPR (20 nM) elicits a large rapid Ca^{2+} release in sea urchin eggs homogenates[1]. cADPR (100 μM; 10 min) induces a sustained elevation of intracellular calcium concentration in a subset (64%) of cultured astrocytes[4]. cADPR (100 μM) and heat (35-38.5 ℃) stimulates oxytocin OT release from the isolated hypothalami of male mice in culture[5]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
In Vivo	cADPR (100 μM; push-pull type of brain microperfusion) elevats OT concentrations in ordinate or subordinate mice[5]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

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REFERENCES

[1]. Galione A, et, al. Ca(2+)-induced Ca2+ release in sea urchin egg homogenates: modulation by cyclic ADP-ribose. Science. 1991 Sep 6;253(5024):1143-6.

[2]. Lee HC, et, al. Structural determination of a cyclic metabolite of NAD+ with intracellular Ca2+-mobilizing activity. J Biol Chem. 1989 Jan 25;264(3):1608-15.

[3]. Ribeiro JM, et, al. Specific cyclic ADP-ribose phosphohydrolase obtained by mutagenic engineering of Mn 2+-dependent ADP-ribose/CDP-alcohol diphosphatase. Sci Rep. 2018 Jan 18;8(1):1036.

[4]. Verderio C, et, al. Evidence of a role for cyclic ADP-ribose in calcium signalling and neurotransmitter release in cultured astrocytes. J Neurochem. 2001 Aug;78(3):646-57.

[5]. Zhong J, 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. 2016 Jul 22;10:304.