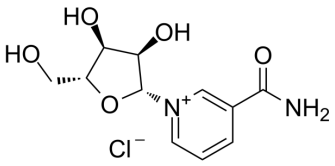
Nicotinamide riboside chloride

Cat. No.:	HY-123033A
CAS No.:	23111-00-4
Molecular Formula:	$C_{11}H_{15}ClN_2O_5$
Molecular Weight:	290.7
Target:	Sirtuin; Endogenous Metabolite
Pathway:	Cell Cycle/DNA Damage; Epigenetics; Metabolic Enzyme/Protease
Storage:	4°C, sealed storage, away from moisture and light * In solvent : -80°C, 6 months; -20°C, 1 month (sealed storage, away from moisture and light)



SOLVENT & SOLUBILITY

In Vitro

H_2O : 125 mg/mL (430.00 mM; Need ultrasonic)
DMSO : 50 mg/mL (172.00 mM; Need ultrasonic)

Preparing Stock Solutions	Solvent / Mass / Concentration	1 mg	5 mg	10 mg
	1 mM	3.4400 mL	17.1999 mL	34.3997 mL
	5 mM	0.6880 mL	3.4400 mL	6.8799 mL
	10 mM	0.3440 mL	1.7200 mL	3.4400 mL

Please refer to the solubility information to select the appropriate solvent.

In Vivo

1. Add each solvent one by one: PBS
   Solubility: 25 mg/mL (86.00 mM); Clear solution; Need ultrasonic

BIOLOGICAL ACTIVITY

Description

Nicotinamide riboside Chloride, an orally active NAD^+ precursor, increases NAD^+ levels and activates SIRT1 and SIRT3. Nicotinamide riboside Chloride is a source of vitamin B3 (niacin) and enhances oxidative metabolism, protection against high fat diet-induced metabolic abnormalities[1]. Nicotinamide riboside Chloride reduces cognitive deterioration in a transgenic mouse model of Alzheimer's disease[2].

IC_{50} & Target			
	SIRT1	SIRT3	Human Endogenous Metabolite

In Vitro

Nicotinamide riboside Chloride (0.5 mM; 24 hours) reduces the acetylation status of Ndufa9 and SOD2[1].
Nicotinamide riboside Chloride increases intracellular and mitochondrial NAD^+ content in C2C12, Hepa1.6, and HEK293 cells in a concentration-dependent manner at concentrations ranging from 1-1000 μM[1].
Nicotinamide riboside chloride boosts NAD to restore antiviral poly(ADP-ribose) polymerase (PARP) functions to support innate immunity for coronavirus (CoVs), a cause of COVID-19[3].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Western Blot Analysis[1]

Cell Line:	HEK293T cells
Concentration:	0.5 mM
Incubation Time:	24 hours
Result:	Reduced the acetylation status of Ndufa9 and SOD2.

In Vivo

Chronic Nicotinamide riboside Chloride (p.o.; 400 mg/kg/day; for 16 weeks) supplementation increases plasma and intracellular NAD^+ content in a tissue-specific manner[1].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Animal Model:	10-week-old C57Bl/6J mice[1]
Dosage:	400 mg/kg
Administration:	PO; daily; for 16 weeks
Result:	Increased plasma and intracellular NAD^+ content in a tissue-specific manner.

CUSTOMER VALIDATION

- Nat Commun. 2023 Jan 16;14(1):240.
- Mol Ther. 2022 Sep 21;S1525-0016(22)00567-6.
- Redox Biol. 2022 Oct 11;57:102507.
- Basic Res Cardiol. 2024 Mar 25.
- Cell Biosci. 2021 Nov 10;11(1):192.

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REFERENCES

[1]. Cantó C, et al. The NAD(+) precursor nicotinamide riboside enhances oxidative metabolism and protectsagainst high-fat diet-induced obesity. Cell Metab. 2012 Jun 6;15(6):838-47.

[2]. Bing Gong, et al. Nicotinamide Riboside Restores Cognition Through an Upregulation of Proliferator-Activated Receptor-γ Coactivator 1α Regulated β-Secretase 1 Degradation and Mitochondrial Gene Expression in Alzheimer's Mouse Models. Neurobiol Aging. 2013 Jun;34(6):1581-8.

[3]. Collin D Heer, et al. Coronavirus and PARP Expression Dysregulate the NAD Metabolome: A Potentially Actionable Component of Innate Immunity. bioRxiv. 2020 Apr 30;2020.04.17.047480.

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