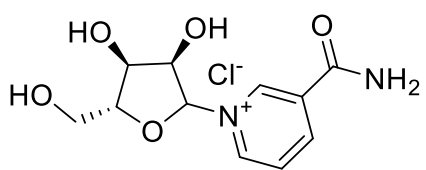


Product data sheet



MedKoo Cat#: 329479 Name: Nicotinamide Riboside Chloride CAS#: 23111-00-4 (chloride) Chemical Formula: C ₁₁ H ₁₅ ClN ₂ O ₅ Molecular Weight: 290.7	
Product supplied as:	Powder
Purity (by HPLC):	≥ 98%
Shipping conditions	Ambient temperature
Storage conditions:	Powder: -20°C 3 years; 4°C 2 years. In solvent: -80°C 3 months; -20°C 2 weeks.

1. Product description:

Nicotinamide riboside, also known as NR and SRT647, is a pyridine-nucleoside form of vitamin B3 that functions as a precursor to nicotinamide adenine dinucleotide or NAD⁺. NR blocks degeneration of surgically severed dorsal root ganglion neurons *ex vivo* and protects against noise-induced hearing loss in living mice. Nicotinamide riboside prevents muscle, neural and melanocyte stem cell senescence. Increased muscular regeneration in mice has been observed after treatment with nicotinamide riboside, leading to speculation that it might improve regeneration of organs such as the liver, kidney, and heart. Nicotinamide riboside also lowers blood glucose and fatty liver in prediabetic and type 2 diabetic models while preventing the development of diabetic peripheral neuropathy. Note: Nicotinamide Riboside chloride is an α/β mixture

2. CoA, QC data, SDS, and handling instruction

SDS and handling instruction, CoA with copies of QC data (NMR, HPLC and MS analytical spectra) can be downloaded from the product web page under “QC And Documents” section. Note: copies of analytical spectra may not be available if the product is being supplied by MedKoo partners. Whether the product was made by MedKoo or provided by its partners, the quality is 100% guaranteed.

3. Solubility data

Solvent	Max Conc. mg/mL	Max Conc. mM
Water	58.0	199.5
DMSO	50.0	172.0

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	3.44 mL	17.20 mL	34.40 mL
5 mM	0.69 mL	3.44 mL	6.88 mL
10 mM	0.34 mL	1.72 mL	3.44 mL
50 mM	0.07 mL	0.34 mL	0.69 mL

5. Molarity Calculator, Reconstitution Calculator, Dilution Calculator

Please refer the product web page under section of “Calculator”

6. Recommended literature which reported protocols for in vitro and in vivo study

In vitro study

1. EFSA Panel on Nutrition, Novel foods and Food allergens (NDA), Turck D, Castenmiller J, de Henauw S, Hirsch-Ernst KI, Kearney J, Maciuk A, Mangelsdorf I, McArdle HJ, Naska A, Pelaez C, Pentieva K, Siani A, Thies F, Toubour S, Vinceti M, Cubadda F, Engel KH, Frenzel T, Heinonen M, Marchelli R, Neuhäuser-Berthold M, Pötting A, Poulsen M, Sanz Y, Schlatter JR, van Loveren Agnès de Sesmaisons-Lecarré H, Germini A, Knutsen HK. Safety of nicotinamide riboside chloride as a novel food pursuant to Regulation (EU) 2015/2283 and bioavailability of nicotinamide from this source, in the context of Directive 2002/46/EC. EFSA J. 2019 Aug 7;17(8):e05775. doi: 10.2903/j.efsa.2019.5775. PMID: 32626405; PMCID: PMC7009190.

In vivo study

1. Conze D, Brenner C, Kruger CL. Safety and Metabolism of Long-term Administration of NIAGEN (Nicotinamide Riboside Chloride) in a Randomized, Double-Blind, Placebo-controlled Clinical Trial of Healthy Overweight Adults. Sci Rep. 2019 Jul 5;9(1):9772. doi: 10.1038/s41598-019-46120-z. PMID: 31278280; PMCID: PMC6611812.

Product data sheet



2. Zhang X, Henneman NF, Girardot PE, Sellers JT, Chrenek MA, Li Y, Wang J, Brenner C, Nickerson JM, Boatright JH. Systemic Treatment With Nicotinamide Riboside Is Protective in a Mouse Model of Light-Induced Retinal Degeneration. *Invest Ophthalmol Vis Sci.* 2020 Aug 3;61(10):47. doi: 10.1167/iovs.61.10.47. PMID: 32852543; PMCID: PMC7452859.

7. Bioactivity

Biological target:

NAD⁺ precursor, increases NAD⁺ levels and activates SIRT1 and SIRT3.

In vitro activity

To determine the metabolic fate of the NF in blood, an in vitro study was conducted in which equal amounts of ¹³C - and deuterium - labelled nicotinamide riboside chloride were added to water, heparinised whole blood, heparinised plasma, and serum at a concentration of 39 μM. The nicotinamide riboside and NAM contents of the samples were analysed immediately (T0) or after incubation at 37°C for 5 and 10 min. Compared to T0, there was no significant change in the amount of nicotinamide riboside or NAM in water, plasma, and serum samples over the course of the 10 min incubation period. In contrast, the amount of nicotinamide riboside in whole blood decreased within 5 min, while the amount of NAM increased. Similar results were obtained when the samples were incubated at 4°C, although the kinetics of the decrease in the amount of nicotinamide riboside and increase in the amount of NAM in whole blood were delayed compared to those observed at 37°C. Similar results have been reported by Liu et al. The Panel notes that these results indicate that the NF can be metabolised to NAM in a cellular component of whole blood.

Reference: EFSA J. 2019 Aug; 17(8): e05775. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7009190/>

In vivo activity

Exposure to degeneration-inducing levels of light suppressed retinal NAD⁺ levels. Mice undergoing light-induced retinal degeneration exhibited significantly suppressed retinal function, severely disrupted photoreceptor cell layers, and increased apoptosis and inflammation in the outer retina. Treatment with NR increased levels of NAD⁺ in retina and prevented these deleterious outcomes. This study is the first to report the protective effects of NR treatment in a mouse model of retinal degeneration. The positive outcomes, coupled with human tolerance to NR dosing, suggest that maintaining retinal NAD⁺ via systemic NR treatment should be further explored for clinical relevance.

Reference: *Invest Ophthalmol Vis Sci.* 2020 Aug; 61(10): 47. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7452859/>

Note: The information listed here was extracted from literature. MedKoo has not independently retested and confirmed the accuracy of these methods. Customer should use it just for a reference only.