

NR Supreme



1 Vegetarian
Hard Capsule

OVERVIEW

Assists with NAD+ production and enhances NAD+ levels in the body.

BENEFITS TO YOUR PATIENT

- > Increases NAD+ status and replenishes body's NAD+ pool
- > Provides nutritional support for NAD+ replenishment which can:
 - Support energy production
 - Support healthy aging
 - Provide antioxidant support

Active Ingredients (per vegetarian hard capsule)	
Nicotinamide Riboside Chloride	300 mg
equiv. ribose	154.8 mg

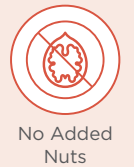
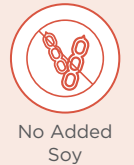
Pack Size	30 capsules
Serving Per Pack	30 serves

Excipients
Hydrated silica
Hypromellose
Purified water

Directions for Use
Adults, take one capsule daily with water, after food, or as directed by your healthcare professional.

Allergen Information
No added: Soy, dairy, lactose, gluten, nuts.

Warnings
<ul style="list-style-type: none"> • Not to be taken by children under 12 years old. • Not recommended for use during pregnancy or lactation. • Vitamin supplements should not replace a balanced diet. • Contains ribose which is a sugar.



EDUCATION:

Background

Nicotinamide riboside (NR) is one of the most well-studied nicotinamide adenine dinucleotide (NAD+) precursors due to its capacity to elevate NAD+ levels in the body.¹

Mechanisms of action

Nicotinamide (NAM) is required for the synthesis of NAD+, an essential coenzyme involved in a number of metabolic pathways. In fact, an estimated 200 enzymes – including dehydrogenases – require NAD and NADP as coenzymes.²

As an electron carrier, NAD+ is necessary for oxidative reactions that occur in the cytosol and mitochondria. Due to its capacity to extract energy from substrates, NAD+ is fundamental to cellular health.³ NAD+ is also required for carbohydrate oxidation during the production of adenosine triphosphate (ATP).⁴

Pharmacokinetics

Absorption

Nicotinamide is absorbed predominantly in the small intestine via facilitated diffusion. Once in the bloodstream, nicotinamide moves across cell membranes via passive diffusion.²

Metabolism to NAD+

NR acts as a precursor in producing NAD+ via two pathways:

1. The NRK1/2 Pathway

NR is phosphorylated to nicotinamide mononucleotide (NMN) by the enzyme NR kinase Nrk1. The resulting MNM is then converted to NAD+ by NMN adenylyltransferase.

2. The salvage pathway

NR, Nicotinic acid (NA) or NAM is converted to NMN under the influence of the enzyme nicotinamide phosphoribosyltransferase (NAMPT). NMN is then converted to NAD+ by nicotinamide mononucleotide adenylyltransferase (NMNAT aka NMN transferase).⁷

NR has the ability to maintain intracellular levels of NAD+ in the body.⁴ In the first human clinical trial conducted with NR, results found that blood NAD+ levels can increase up

to 2.7 fold with a single oral dose of NR.⁵ A randomised, double-blind, placebo-controlled trial consisting of 113 people receiving NR in combination with pterostilbene (NRPT) found that the group receiving NRPT at 250mg per day had significantly increased NAD+ levels to 40% over baseline.⁶

Elimination

NAD is transformed into adenosine diphosphate-ribose and nicotinamide by the enzyme glycohydrolase. The resulting nicotinamide is then released from cells for processing by the liver. In the liver, nicotinamide undergoes methylation and oxidation – its metabolites are then excreted in the urine. Much of the free nicotinamide is reabsorbed into the body via glomerular filtrate.^{2,3}

Figure 1: The salvage pathway⁷

In salvage pathway, the precursors are converted into an intermediate called nicotinamide mononucleotide (NMN) through nicotinamide phosphoribosyltransferase (NAMPT). Then NMN is converted into NAD+ via nicotinamide mononucleotide adenylyltransferase (NMNAT). NAD+ generated by this pathway is consumed by multiple enzymes including sirtuins, PARPs, and cADPR synthases.

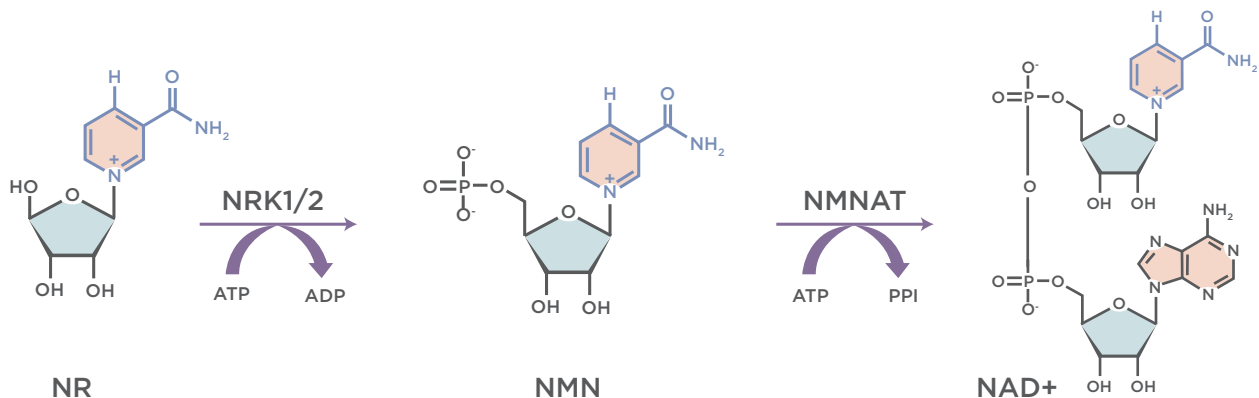
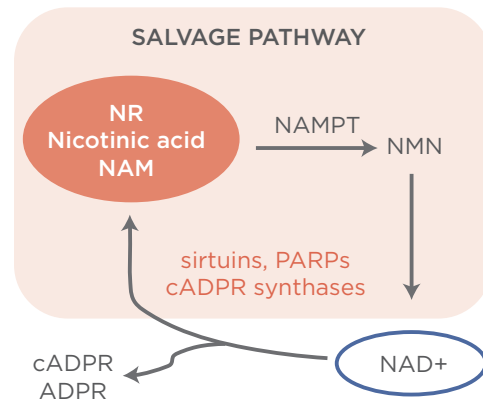


Figure 2: The NRK1/2 Pathway.⁴

NRK 1/2 mediated NAD+ biosynthesis pathway. Nicotinamide riboside (NR) is metabolised by nicotinamide riboside kinase (NRK 1/2) to nicotinamide mononucleotide (NMN) and subsequently converted to NAD+ by NMN-adenylyltransferase (NMNAT) activity).