

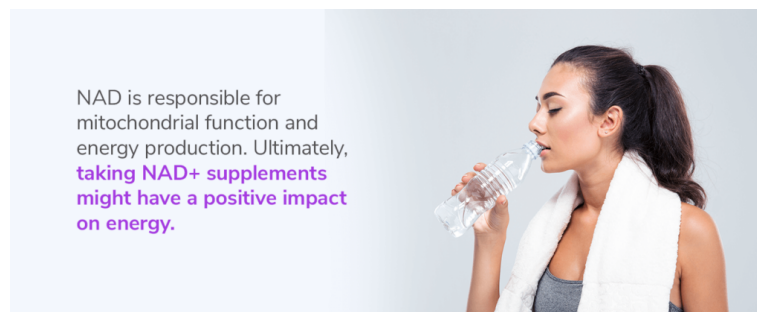


# NAD IV Therapy and MNM

## What are NAD+ and MNM?

Nicotinamide adenine dinucleotide, or NAD<sup>+</sup>, is a coenzyme of niacin, sometimes referred to as vitamin B3. Being an essential component of ATP, the chemical that all cells require to operate, it is one of the fundamental molecules that make life possible. Without it, no living thing—plant, animal, or human—can survive. In actuality, NAD<sup>+</sup> is just as essential to life as oxygen; without it, a person would die in about 40 seconds. NAD [helps break down glucose and oxidize fatty acids in the metabolism to produce energy](#). Nicotine adenine mononucleotide (MNM) is a precursor of NAD<sup>+</sup>. The amount of NAD your body can make depends on the amount of NMN available in your body.

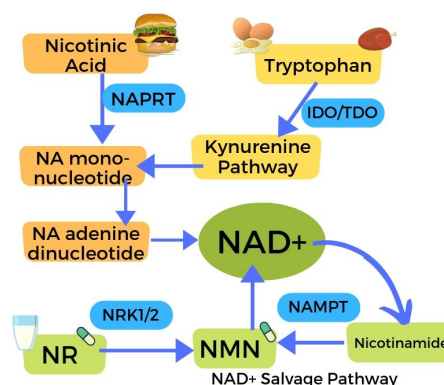
In addition to converting nutrients into ATP, NAD is a naturally occurring co-enzyme that is involved in many other vital physiological processes, including DNA repair and maintenance, preserving the stability and integrity of cellular function, and preventing mutations that can cause cancer and other chronic diseases.



## How does the body get NAD+?

NAD<sup>+</sup> availability in human bodies is determined by [three main processes](#). The first pathway converts Vitamin B3 (nicotinic acid) to NAD. Nicotinate phosphoribosyltransferase (NAPRT) is the intracellular enzyme that catalyses this first step in the biosynthesis of NAD from nicotinic acid. The second process relies on the conversion of tryptophan to NAD<sup>+</sup> via the kynurenine pathway through two key enzymes, tryptophan-2,3-dioxygenase (TDO) and indoleamine-2,3-dioxygenase (2DO). The third pathway, referred to as the salvage pathway, recycles NAD<sup>+</sup> through consumption of nicotinamide.

Niacin is essential for human health and can be obtained from red meat: beef, beef liver, pork, poultry, fish, brown rice, fortified cereals and breads, nuts, seeds, legumes and bananas.



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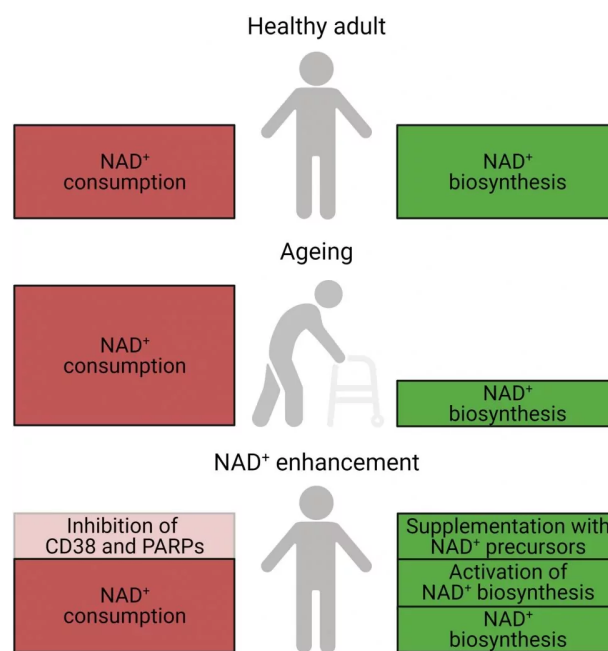
### NAD+ Precursors

Another precursor of NAD, NMN, is naturally found in small amounts in fruits and vegetables such as avocados, broccoli, cabbage, and cucumbers but the body can produce it from niacin. NMN may also be taken as a nutritional supplement.



## Why Functional Medicine Focuses on NAD<sup>+</sup>

The focus of functional medicine is identifying and managing the root cause of dysfunction in our body. That is why we focus so much on lifestyle interventions, i.e. nutrition, exercise, supplements and stress management to improve your “[healthspan](#)”, not just the lifespan. [NAD<sup>+</sup> is one of the critical coenzymes](#) in maintenance of critical metabolic processes in our body. It is for that reason that it is increasingly playing a significant role in [anti-ageing medicine](#). Supplementation is useful because as people age, their levels of NAD<sup>+</sup> diminish, leading to a reduction in energy and cognitive function, metabolic illness, and frailty.



How NAD<sup>+</sup> Levels Change with Age

### Genomic Stability

The body releases reactive oxygen species (ROS) and reactive nitrogen species (RNS) daily, which can harm cellular DNA. Exposure to radiation, mutagens, and carcinogens can cause genetic instability, accelerated cellular aging, and increased cancer risk. Low NAD<sup>+</sup> levels hinder DNA damage response, increasing cell damage.

### Genetic Expression

Genetic expression involves the human body using cellular DNA to produce proteins or chemicals, influencing physical characteristics like skin tone and hair colour. Understanding this process is crucial for disease prevention and understanding biology. [Genetic silencing](#), caused by deficiency in NAD, can modify gene expression and lead to metabolic inefficiency. Think of NAD as petrol in our cars. Even the best engine cannot function without fuel.

### Immunity and Inflammation

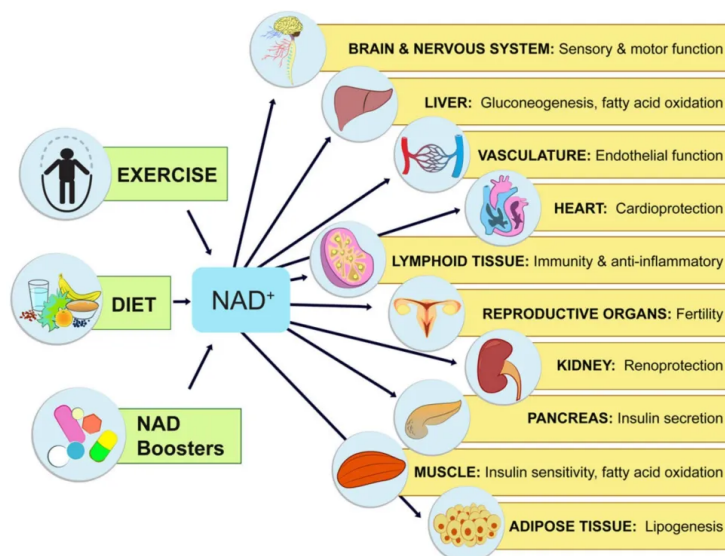
NAD<sup>+</sup> levels significantly influence immune responses during infections. Elevated NAD<sup>+</sup> levels stimulate macrophage oxidative phosphorylation, improving their ability to neutralize pathogens. NAD<sup>+</sup> also has anti-inflammatory effects, suggesting its potential as a therapeutic target in infection prevention.

### Energy Metabolism

NAD<sup>+</sup> controls cellular activity to convert nutrients into energy and powers essential metabolic processes. NAD<sup>+</sup> facilitates the production of energy in the form of ATP, within our cells by moving electrons between molecules.

### Circadian Rhythm

The circadian rhythm, which controls periods of awake and sleep, is intimately correlated with NAD<sup>+</sup> levels. The circadian clock can be upset by low NAD<sup>+</sup>, which can cause symptoms like mood swings, hormone imbalances, and excessive tiredness.



### Benefits of NAD<sup>+</sup> in our Bodies

#### Cardiovascular Function

The heart's metabolic activity relies on maintaining normal NAD<sup>+</sup> levels, which aid in healing after major cardiac events like myocardial infarction, transient ischemic stroke or stroke. A lack of NAD<sup>+</sup> also contributes to development of conditions like cardiac hypertrophy and fibrosis.

#### Kidney Function

Aging kidney function declines, and NAD<sup>+</sup> levels may decline. Supplementing with NAD<sup>+</sup> can protect against acute renal damage by releasing Prostaglandin E2, aiding kidney recovery.

#### Liver Function

NAD<sup>+</sup> levels are crucial for liver function and protection against diseases like fatty liver disease and hepatic fibrosis. NAD<sup>+</sup> supplements improve liver function, protect against toxic diseases, and promote regeneration.

#### Neurological Function

Research indicates that brain neurons benefit from NAD<sup>+</sup> levels post-stroke, and NAD<sup>+</sup> supplements have potential in treating and preventing neurodegenerative illnesses like Alzheimer's disease.

### Benefits of IV NAD Therapy

NAD<sup>+</sup> is crucial for body processes, and maintaining appropriate levels is essential. Supplemental IV therapy is of benefit as an anti-ageing therapy but also in NAD<sup>+</sup> deficiency cases like pellagra, dementia, or chronic diarrhoea. Some specific indications for NAD IV therapy are:

#### Addiction Therapy

IV NAD<sup>+</sup> therapy is beneficial for addiction management, particularly in patients recovering from opioid, alcohol, chemical, or prescription drug addictions, as it reduces cravings and withdrawal symptoms.

#### Improved Cognition

IV NAD<sup>+</sup> therapy has the potential to improve neurological function generally, increase focus and concentration, encourage brain regeneration, and improve memory. Investigations into the precise mechanism by which IV NAD<sup>+</sup> supplementation yields these effects are still ongoing.

#### Chronic Fatigue

IV NAD<sup>+</sup> treatment improves energy and fatigue by improving ATP synthesis through glycolytic and tricarboxylic acid processes, which rely on NAD<sup>+</sup> as a cofactor.



## Athletic Performance

IV NAD+ therapy improves athletes' performance by generating ATP, enhancing energy, cognitive performance, and muscle growth, potentially leading to hypertrophy and hyperplasia. Research indicates that NAD+ supplementation may support the growth and regeneration of muscles, possibly resulting in hypertrophy and hyperplasia.

## Pain Management

Because IV NAD+ therapy has anti-inflammatory effects on the body, it is used in managing pain. Since pain and inflammation are closely related using NAD+ helps to relieve pain and reduce inflammation. Although research is still being done, NAD+'s efficacy as a pain reliever is not yet proven.

## How Frequently should I do the IV Therapy?

Ideally NAD IV therapy should be administered continuously over a long period of time, especially for older patients and those with addiction and cognitive impairment. Remember that you are unique, so your therapy should be, too. Treatment frequency and dosage must be customized for each patient. The treating physician will decide on the dosage and frequency. For long-term indications, therapy may include more than one session per week or several treatments spaced out over a few months. Your doctor will also advise if you need to supplement with oral MNM on a daily basis.

## Costs

A baseline risk assessment will be required, which will be carried out at our functional medicine consultation rates. We do not accept medical aid as payment for our services. Fees must be paid immediately following each consultation.

We will also give you a cost estimate for any additional functional laboratory costs, genomics tests, injections and IV therapies required. The costs for conventional laboratory tests are payable directly to the laboratory. All products are available on a cash-on-delivery basis.

## Our Partners



We do our diagnostic tests at accredited laboratories like Lancet, Ampath, Fagron Genomics, Geneway, Biometrix, DNAlysis and MDS laboratories. Functional laboratories do not get funded by your medical aid. We source our high-quality products from renowned suppliers like Amipro Metagenics, Willow Wellness, Genologix, Xymogen, IDEXIS, Fagron and similar suppliers.

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