

NAD+ Therapy Overview

What is NAD+

NAD+ stands for “nicotinamide adenine dinucleotide,” and is a coenzyme found in all of our cells. It is essential for cellular metabolism and energy production, and it binds and assists other proteins to provide a wide variety of functions including DNA repair.

Unfortunately, **NAD+ levels decline as we age**. Replenishing NAD+ can have profound anti-aging benefits.

Benefits of NAD+

Cellular health determines our overall wellbeing and youthfulness, and DNA repair is essential for our cellular health. Each strand of DNA contains the blueprint for our entire body. DNA damage can lead to cell death and mutations, which can then lead to functional decline or cancer.

NAD+ is crucial for DNA repair. In a 2017 study, elderly mice with damaged tissue were given NAD+, which resulted in greater DNA repair in their cells. When the old tissue (after NAD+ supplementation) were examined, they were identical to the tissue of 3-month-old mice!

NAD+ in Muscle Function

A recent study found that muscular function improved in mice that were given NAD+. These mice suffered from degenerative muscle diseases that affected their mitochondria. When the mice were given NAD+, it helped to counter the degeneration, and even improved their muscle function.

NAD+ in Learning & Memory

In a 2018 study on Alzheimer’s disease modeled mice, one group was given NAD+ and another group not. These mice were then put into a maze daily, and scientists documented how fast they learned the route to get to the cheese.

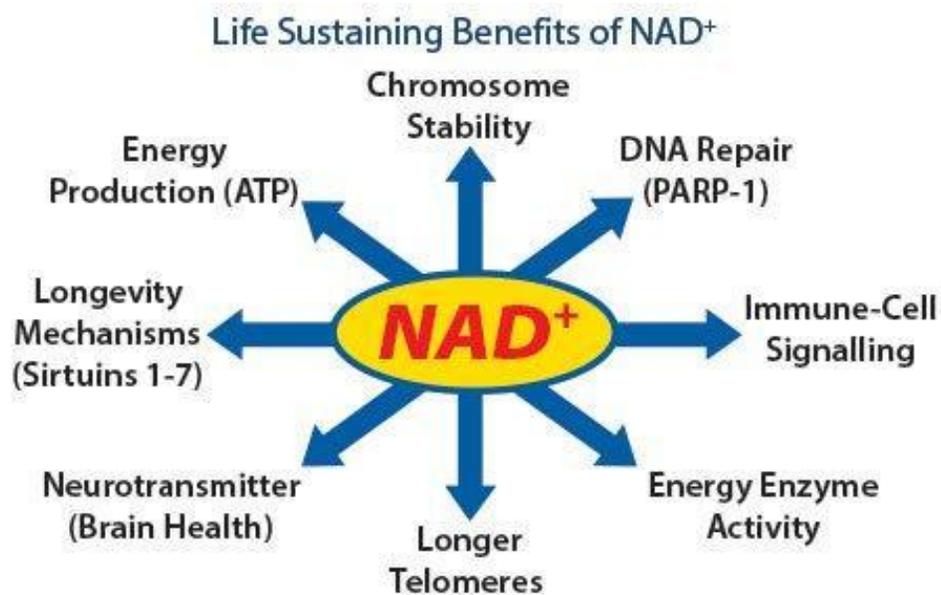
On the first day of experiment, both groups averaged at just over 40 seconds. On the seventh day, the non-NAD+ group still needed over 35 seconds to complete the maze, but the NAD+ group completed the maze in an average of only 10 SECONDS.

When the mice's brain were examined, the NAD+ group showed decreases in DNA damage, neuroinflammation, and neural apoptosis (programmed cell death). This study served as a dramatic demonstration of the rejuvenative effects of NAD+ on brain health.

Excerpts from Life Extension Magazine's 2014 article:

The Youth Restoring Benefits Of NAD+

Scientifically reviewed by: Dr. Tennoy V., MD, on January 2020. Written By Scott Rahway.



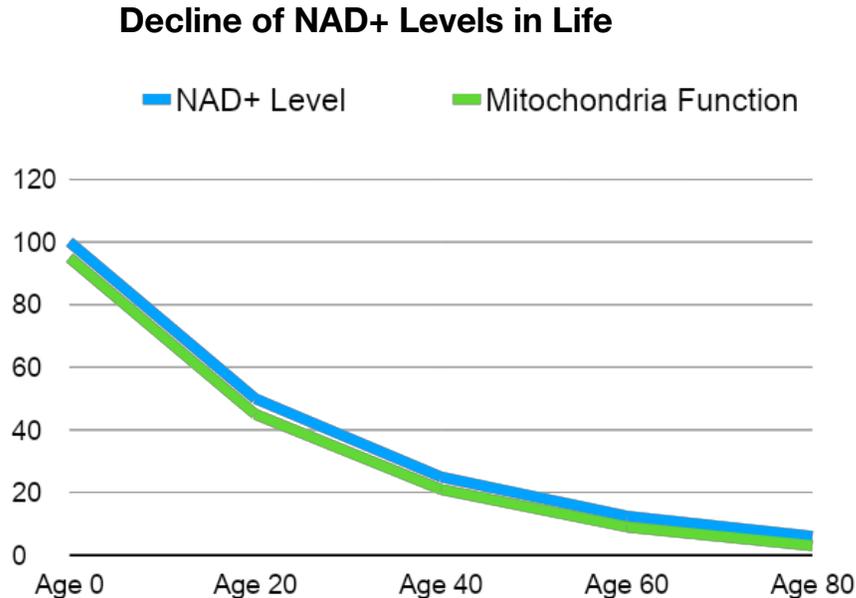
Our aging process is accompanied by a noticeable increase in **fatigue** and **loss of motivation**. The tiredness we outwardly feel reflects inward impairment of cellular functions.

NAD+ is found in every single cell in our body and is essential to life:

- It is an absolute requirement for normal and efficient energy transfer from food to cells.
- It is essential in turning off genes encoding proteins that accelerate aging, such as those involved in inflammation, fat synthesis and storage, and blood sugar metabolism.

With advanced age, cell NAD+ levels plummet to near zero.

As NAD+ levels decline, **mitochondrial function** is impaired, resulting in fewer mitochondria surviving. This vicious cycle of mitochondrial depletion results in many of the physical symptoms of aging.



Prominent universities have been investigating **NAD+** as a potential therapy for age-related degenerative disease. Compelling research shows that NAD+ has a unique ability to protect tissues, induce DNA repair, and increase lifespan.

It has long been known that **NAD+** plays an important role in transferring energy released from glucose and fatty acids to the mitochondria so that it can be converted into cellular energy. Without sufficient **NAD+**, energy transfer in cells breaks down, resulting in age-accelerated **mitochondrial dysfunction**.

NAD+ is an essential cofactor of key **enzymes** responsible for longevity called **sirtuins**. While **resveratrol** is well known for sirtuin activation, evidence indicates it does so *indirectly*, whereas NAD+ *directly* activates sirtuins to regulate the genes of aging.

Sirtuins, specifically **SIRT1** and **SIRT3**, are intimately related to longevity through their control of gene expressions and require **NAD+** for their activity.

By activating the sirtuins, we're able to gain control over one of our body's anti-aging "switches." **SIRT enzymes "turn off" certain genes that promote aging**, and can be activated by calorie restriction. Calorie restriction is a proven method of reliably extending lifespan in all organisms, and it does so by activating the sirtuins through **NAD+**.

Consequences Of Falling NAD+ Levels

The age-related decrease in NAD+ leads to accumulation of defects in both energy- and gene-related functions. These defects feed on one another to produce the disorders we typically identify as aging. The consequences of a decline in NAD+ levels include:

- **Neurodegeneration** in the brain
- **Vascular inflammation**, producing damage to blood vessels that can result in stroke or heart attack
- **Increased fat storage** in the liver, which can lead to nonalcoholic fatty liver disease (NAFLD)
- **Increased fat production and deposition** in white adipose tissue, the primary fat storage form found in dangerous belly fat
- **Insulin resistance**, preventing cells from appropriately removing glucose from blood, producing higher blood sugar levels and leading directly to metabolic syndrome
- **Fatigue, loss of muscle strength, and fatty infiltration of muscles**, resulting in reduced fatty acid oxidation (“burning”), thereby depriving muscles of their normal sources of energy

By increasing intracellular **NAD+** levels, age-related **mitochondrial dysfunction** can be reversed. One powerful method to increase **NAD+** levels is direct IV administration of NAD+, allowing maximum absorption comparing to other routes. At Uplyft, we provide IV NAD infusions at 250mg, 500mg or 1,000mg increments. Larger dose requires longer infusion time, up to 6-8 hours at 1,000mg doses.