

Niacinamide Accelerates Recovery in COVID-19 Patients, Clinical Trial Shows

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STORY AT-A-GLANCE

- › Niacinamide is a form of vitamin B3 that helps your body recycle and restore NAD⁺, a molecule essential for energy production, cellular repair, and metabolic stability across all tissues
- › A new clinical trial shows that niacinamide accelerates recovery from COVID-19 and reduces long COVID symptoms by restoring NAD⁺ and supporting mitochondrial and gut microbiome function
- › Earlier clinical research supports the use of niacinamide in COVID-related kidney injury, where it helped preserve kidney function and lowered mortality in patients with advanced acute kidney damage
- › I recommend supplementing with 50 milligrams of niacinamide, taken three to four times daily, spaced evenly throughout the day to sustain NAD⁺ production
- › It's important to balance your B vitamin intake by getting them from food sources, such as leafy greens, grass fed beef, liver, mushrooms, and pastured eggs, to support overall health

If you've had COVID-19 or know someone who has, you've likely seen how the illness lingers. Unresolved fatigue, reduced physical capacity, and cognitive fog are common weeks or even months after the infection clears. In more severe cases, the virus left behind lasting damage to the kidneys, lungs, or vascular system. These outcomes are now recognized as long COVID.

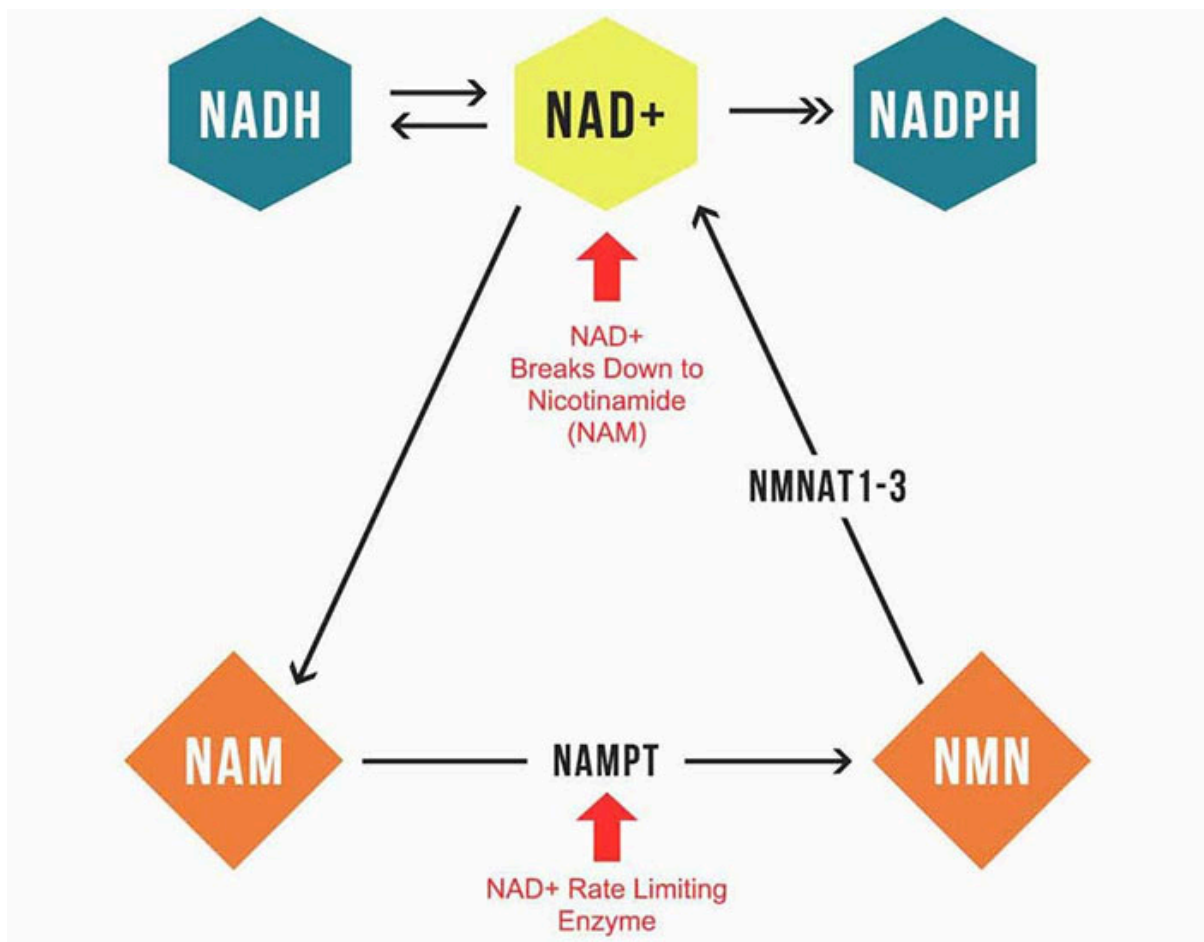
As attention shifts from short-term containment to long-term recovery, more researchers are focusing on the cellular pathways that support resilience after viral illness. One area drawing renewed attention is the use of nicotinamide adenine dinucleotide (NAD⁺), a molecule your cells use to produce energy, repair DNA, regulate inflammation, and maintain mitochondrial function.

One of the most straightforward ways to raise NAD⁺ safely and effectively is through niacinamide, a common and inexpensive form of vitamin B3. Case in point, a new placebo-controlled trial published in *Nature Metabolism* has highlighted niacinamide as a meaningful tool in restoring health after COVID.¹

How Niacinamide Restores Your NAD⁺ Levels

NAD⁺ is a molecule found in all living cells, essential for various biological processes. It plays a foundational role in mitochondrial function, particularly in the electron transport chain, where it helps convert nutrients into ATP, your cells' energy currency. Without sufficient NAD⁺, energy production slows and cells begin to lose functional integrity.

- **NAD⁺ supports DNA repair and cellular stress responses** — Certain enzymes in your body, like poly (ADP-ribose) polymerase (PARPs) and sirtuins, rely on NAD⁺ to repair damaged DNA and regulate cell survival under stress. These enzymes consume NAD⁺ as they work. This is why during periods of inflammation, infection, or injury, NAD⁺ levels fall sharply. As levels drop, your body's ability to maintain homeostasis weakens.
- **Niacinamide replenishes NAD⁺ directly and efficiently** — As you can see in the illustration below, when NAD is used up, it gets broken down into niacinamide. The body then recycles niacinamide through a salvage pathway, converting it into nicotinamide mononucleotide (NMN) and then back into NAD⁺. This makes niacinamide not just a precursor, but also the natural product of NAD⁺ turnover.



- **Activating NAMPT is key to effective NAD⁺ restoration** – The enzyme NAMPT controls how much NAD⁺ is produced from niacinamide. While NMN supplements have become popular, NMNAT (the enzyme that converts NMN to NAD⁺) does not regulate the overall pace.

Because NAMPT determines the flow through the entire pathway, supporting its activity is more essential for restoring NAD⁺. So, flooding your body with NMN is not going to be as useful as using small amounts of niacinamide and activating NAMPT.

To learn more about how this process translates into whole-body resilience, read "[The Wide-Ranging Health Benefits of Niacinamide](#)."

Niacinamide Accelerates Recovery and Reduces Long COVID Symptoms

The featured study, called the COVit-2 trial, was designed to assess whether oral nicotinamide supplementation could influence recovery in newly diagnosed COVID-19 patients. Conducted across multiple centers in Germany, the study enrolled a total of 900 individuals who had recently tested positive for SARS-CoV-2. They were randomly assigned to take either nicotinamide or a placebo for four weeks, and their symptoms and progress were tracked for six months.²

- **Patients received a dual-form nicotinamide regimen** – Those in the treatment group were given 1,000 milligrams of nicotinamide per day, delivered in two tablet forms. One was a conventional oral tablet, while the other was formulated to release in the colon, where most of the gut microbiome resides. This approach was designed to support microbiome-targeted recovery.
- **Early improvements were seen by week two** – Participants receiving nicotinamide were more likely to report restored physical performance and an improved ability to handle everyday tasks. These gains were especially notable in individuals with risk factors for more severe illness, and they appeared during the active four-week supplementation period.
- **Long-term benefits emerged at six months** – Patients who had taken nicotinamide during the initial infection were less likely to report persistent long COVID symptoms, such as fatigue or difficulty concentrating. The effect was most pronounced in those who showed early recovery, suggesting that timely support influences long-term outcomes.
- **Nicotinamide appeared to protect the gut microbiome** – Microbiome analysis revealed signs of metabolic stress and gene-level disruption in placebo participants two weeks after infection. In contrast, those who received nicotinamide had a more stable microbial profile. Their gut bacteria maintained more balanced gene expression patterns, suggesting better systemic regulation. According to Professor Philip Rosenstiel, who led the microbiome studies:

"The microbiome of COVID-19 patients still shows a kind of emergency metabolism around two weeks after the onset of the disease, in which the body obviously tries to compensate for the known deficits in important metabolic factors by upregulating other metabolic processes.

We did not observe these changes in the nicotinamide study group – probably because the deficiency could be compensated by administering nicotinamide. At the same time, we observed a faster physical recovery in these cases. The positive influence on the microbiome is apparently related to the faster recovery.

This is the first time we have shown that influencing the microbiome, in this case through supplementation of a nutrient, can have a positive effect on a viral infection. This is an important milestone in clinical research."³

While most COVID recovery strategies focus on immune repair, this trial is the first to demonstrate that a vitamin-based therapy could improve both physical recovery and gut microbial balance after a viral infection.

Niacinamide Also Helps with COVID-Related Kidney Injury

Acute kidney injury (AKI) is one of the most serious complications in hospitalized COVID-19 patients. To explore whether NAD⁺ restoration helps, researchers at two Boston hospitals studied the effects of niacinamide supplementation in COVID patients with persistent AKI. This study, published in 2020, was one of the first to suggest that NAD⁺ depletion plays a central role in COVID-related organ failure.⁴

- **Niacinamide reduced death in severe AKI cases** – A total of 201 hospitalized COVID patients with confirmed AKI were enrolled. Ninety patients at one hospital received 1 gram of niacinamide daily, while 111 patients at a second hospital received the same care protocol without niacinamide.

Among patients with advanced (stage 2 or 3) AKI, those who received niacinamide had an 80% lower risk of death compared to controls. Kidney function also stabilized, with creatinine levels remaining steady in the niacinamide group over 10 days, while steadily worsening in the control group.

- **NAD⁺ loss is central to COVID-related kidney dysfunction** – COVID-related AKI appears to deplete NAD⁺ through both increased breakdown and impaired production. Without sufficient NAD⁺, these cells no longer sustain energy-intensive filtration and transport functions, increasing the risk of dysfunction and death. Niacinamide, as a direct precursor, restores NAD⁺ levels and helps the kidney maintain its energy demands under stress.
- **The benefit was specific to more advanced kidney injury** – The benefits were not seen in milder cases of AKI, which suggests that the severity of NAD⁺ depletion determines the extent of benefit. Individuals with early-stage AKI likely retain enough NAD⁺ to recover naturally, while those with more advanced injury require supplementation to prevent further decline.

These findings support NAD⁺ restoration as a therapeutic target. Although this was not a randomized trial, the results align with broader evidence that NAD⁺ is essential for organ protection during systemic stress.

What Are the Other Health Benefits of Niacinamide?

In addition to its central role in cellular energy production, niacinamide contributes to several other physiological processes that support your overall health. These include:

- **Improves body composition and physical energy** – In animal models of obesity, niacinamide supplementation led to a 47% reduction in body fat after just three weeks. Treated mice also showed gains in lean mass and increased physical activity, even across different dietary conditions. This shift is driven by enhanced mitochondrial biogenesis and increased fat oxidation, both of which convert stored fat into usable energy more efficiently.^{5,6}

- **Limits damage from lipid peroxidation** – Stored polyunsaturated fats (PUFs), especially **linoleic acid** (LA), convert into harmful inflammatory compounds, with one of the most toxic byproducts being 4-HNE, an aldehyde that plays a causative role in heart failure.⁷ Fortunately, the enzyme aldehyde dehydrogenase (ALDH) deactivates 4-HNE, and the best way to increase the activity of this enzyme system is to make sure you have sufficient NAD⁺.
- **Protects brain cells and slows neurodegeneration** – Niacinamide helps reduce the risk of cognitive decline by supporting neuronal energy supply and inhibiting overactive enzymes like PARP-1 and SIRT1. These enzymes, when unchecked, drain NAD⁺ and accelerate brain cell stress.⁸
- **Strengthens the gut barrier** – The intestinal lining requires high levels of ATP to stay intact. When energy runs low, the gut becomes permeable, allowing bacterial endotoxins like LPS to enter the bloodstream. This contributes to widespread inflammation and metabolic dysfunction. In models of alcohol-induced gut injury, niacinamide restored NAD⁺ and ATP levels in intestinal cells and tightened the barrier.⁹
- **Supports kidney function beyond acute illness** – Beyond its acute protective role in COVID-related kidney injury, niacinamide may offer broader support for kidney function. NAD⁺ depletion contributes to chronic kidney disease (CKD) by impairing glucose oxidation and promoting inefficient fat metabolism.

Niacinamide helps restore the NAD/NADH ratio, preserve mitochondrial function, and reduce stress signaling in kidney cells. It also tempers the activity of NAD-consuming enzymes that accelerate damage.¹⁰

- **Helps maintain healthy heart muscle and prevent fibrosis** – Heart failure is closely tied to declining NAD⁺ in cardiomyocytes, the muscle cells responsible for contraction. When energy levels fall, these cells begin releasing pro-fibrotic signals, leading to tissue stiffening and loss of function.

Niacinamide helps sustain ATP production and prevent this transition, offering early protection in models of cardiac stress. Though human trials are still emerging, current findings point to its potential in preserving long-term cardiac resilience.^{11,12}

To explore further benefits of niacinamide beyond those discussed here, check out "[Even More Health Benefits of Niacinamide](#)" and "[Vitamin B3 Boosts Muscle Mass, Improves Glucose Control](#)."

General Niacinamide Recommendations

Supporting NAD⁺ production through niacinamide calls for precision and balance. While high doses have shown benefit in clinical contexts, lower, consistent doses are better suited for daily use to achieve mitochondrial and metabolic support without overwhelming your system, as excessive intake interferes with methylation or increases the risk of adverse effects over time.

- **A practical daily approach involves small, evenly spaced doses** – For optimal health, I recommend taking 50 milligrams of niacinamide three times per day. This dosage has been shown to optimize energy metabolism and boost NAD⁺ levels, which are foundational for everything else to work. It can be taken four times a day if you space them out. Take a dose as soon as you get up, another before going to bed, and two more evenly spaced between those times.
- **Higher doses of B3 cause adverse effects** – The problem with taking too much vitamin B3, whether in the form of niacin or niacinamide, is that it might backfire and contribute to cardiovascular disease, as documented by the Cleveland Clinic.¹³

Also, please note that although niacinamide and niacin are both forms of vitamin B3, niacin will not activate NAMPT like niacinamide, so it is best to use niacinamide. Additionally, niacinamide, unlike niacin, will not cause flushing, which is due to a large release of histamine.

- **Make sure you're getting all the other B vitamins** — Other B vitamins are important for good health, including optimal mitochondrial function — especially regular niacin, riboflavin, and folate. Decreased mitochondrial function is often due to a deficiency in B vitamins, and that's easy to fix with a low-dose, high-quality B complex.

As for food sources, vitamin B3 is found in grass fed beef and mushrooms.¹⁴

Vitamin B6 is plentiful in grass fed beef, potatoes, and bananas.¹⁵ You'll find folate, or vitamin B9, in spinach, broccoli, and asparagus.¹⁶ Vitamin B12-rich foods include grass fed beef liver, wild rainbow trout, and wild sockeye salmon.

By keeping doses modest and consistent, and supporting the broader B vitamin family, it becomes possible to nourish your body's natural NAD⁺ recycling capacity safely and effectively. This makes niacinamide a practical and sustainable approach for supporting mitochondrial function and metabolic recovery in the aftermath of COVID-19.

Frequently Asked Questions (FAQs) About Niacinamide and COVID-19 Recovery

Q: What is niacinamide, and how does it support COVID-19 recovery?

A: Niacinamide is a form of vitamin B3 that helps raise NAD⁺, a molecule required for cellular energy production, DNA repair, and inflammation control. In COVID-19 recovery, NAD⁺ levels often drop due to infection-related stress, impairing mitochondrial function and slowing healing. Niacinamide supports recovery by replenishing NAD⁺, helping the body restore physical strength, protect organs, and rebalance the immune response.

Q: Can niacinamide help with long COVID symptoms like fatigue and brain fog?

A: Yes. The COVit-2 trial found that daily supplementation with nicotinamide (a form of niacinamide) led to faster physical recovery and fewer long COVID symptoms at a six-month follow-up. Participants reported reduced fatigue and better performance in daily activities, suggesting that niacinamide may help address energy loss and neurological stress seen in long COVID.

Q: How does niacinamide affect the gut microbiome after COVID-19?

A: COVID-19 disrupts the gut microbiome, triggering metabolic stress in intestinal bacteria. In the COVit-2 trial, participants who received nicotinamide maintained a more balanced microbiome with healthier gene activity, while those on placebo showed signs of microbial stress. This is the first study to show that a nutrient like niacinamide influences microbiome recovery after a viral infection.

Q: What is the recommended daily dose of niacinamide for general NAD⁺ support?

A: For ongoing support, 50 mg of niacinamide taken three times per day is a balanced approach. This dose is low enough to avoid side effects while still fueling NAD⁺ production through the salvage pathway. Doses can be spaced evenly throughout the day, including one in the morning, one at night, and one or two in between.

Q: Can I take too much niacinamide?

A: Yes. Excessively high doses of niacinamide interfere with methylation or contribute to cardiovascular stress. Clinical trials often use higher doses for short durations, but for daily use, smaller doses are safer. It's also important to support your intake of other B vitamins for optimal mitochondrial and metabolic function.

Sources and References

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