

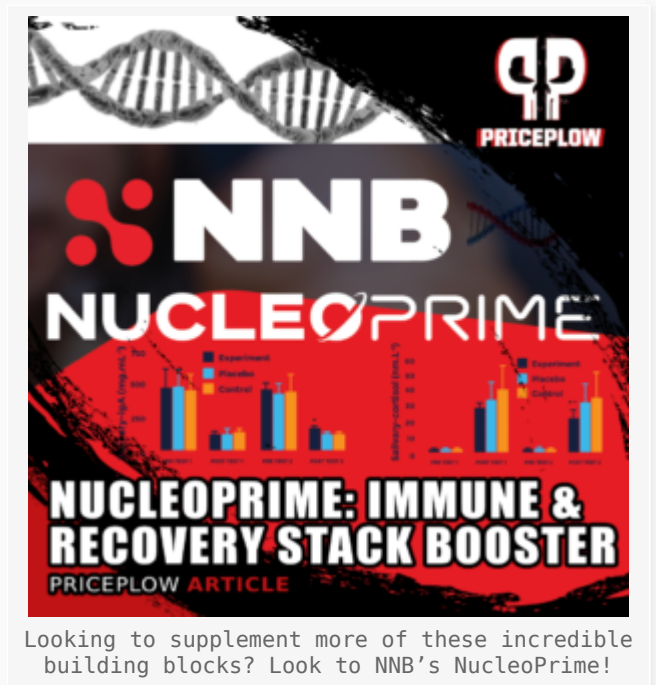
NucleoPrime by NNB Nutrition: Step Up Your Energy Production

written by Mike Roberto | March 13, 2021

You may have caught our article about *nucleotides* – a family of “building block” compounds that play a critical role in energy production throughout the body. This article will focus on *perhaps the best* nucleotide supplement on the market, **NucleoPrime** by novel ingredient developer *NNB Nutrition*.

In one sentence, **nucleotides are the building blocks of RNA and DNA**, leading to a broad list of benefits when supplemented.

The Science



NucleoPrime is a trademarked blend of equal parts *adenosine monophosphate (AMP)*, *guanosine monophosphate (GMP)*, *uridine monophosphate (UMP)*, and *cytidine monophosphate (CMP)*. NNB guarantees each product to contain 24 to 26% of AMP, GMP, UMP, and CMP. NNB backs this guarantee via high-performance liquid chromatography (HPLC) lab tests. HPLC is a gold standard form of analytic chemistry that tells us *exactly what's in each serving of a product*. Nucleotides also have the coveted GRAS certification from the FDA.

Long story short: *you know what you're getting with NucleoPrime*, and that means you're getting the building blocks to better cellular energy. Let's get into those benefits and how we'd stack it into an energy supplement:

- **Athletic Benefits**

It's important to note that muscles use nucleotides as an energy source.

Muscle fibers use ATP – *adenosine triphosphate* – as they contract.[1] A recent

trial, which was supported by NNB Nutrition, tested the effects of nucleotide supplementation on exercise performance by measuring peak anaerobic power and fatigue markers. The trial had nine participants perform four high-intensity interval sets on an exercise bike, gave the subjects NucleoPrime, then had them repeat the high-intensity interval training seven days later. As participants reached the fourth set, their anaerobic peak power and relative peak power decreased due to fatigue.

Figure 3. Peak Power Output (W) for Pre- and Post-Testing Exercise Protocol.

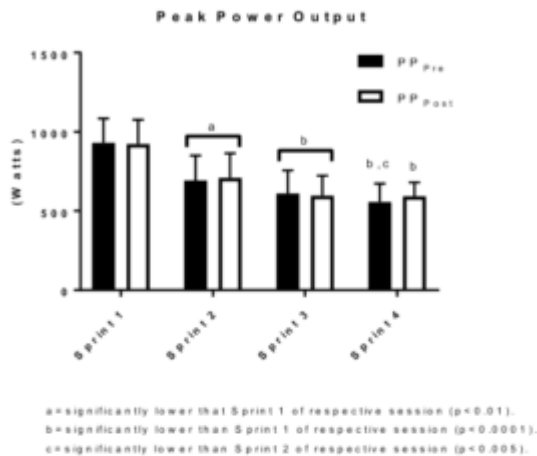
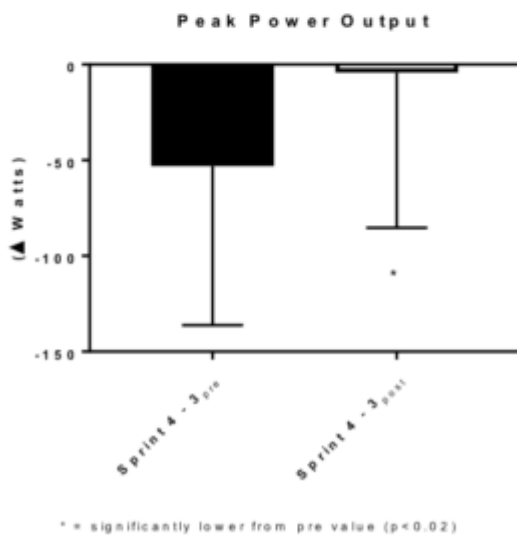


Figure 4. Delta Change in PP from Sprint 3 to Sprint 4 at Pre- & Post-Testing.



Nucleotide consumption reduces the *drop* in peak power output between sprint bouts. [<https://blog.priceplow.com/wp-content/uploads/nnb-nutrition-nucleotides-clinical-study.pdf>]

Participants after NucleoPrime supplementation maintained their peak power longer into the second training session when compared to the pre-

supplementation session.[2] This suggests that NucleoPrime *may help* improve endurance by allowing athletes to output power for longer. While the researchers saw no statistically significant differences between the two sessions, the *improvements* in power output when comparing *within-session* performance before and after supplementation are interesting. It's important to note that the repeated-bout effect may confound this, as a recently worked muscle may be more resistant to damage when subsequently exposed to the same exercise.[3]

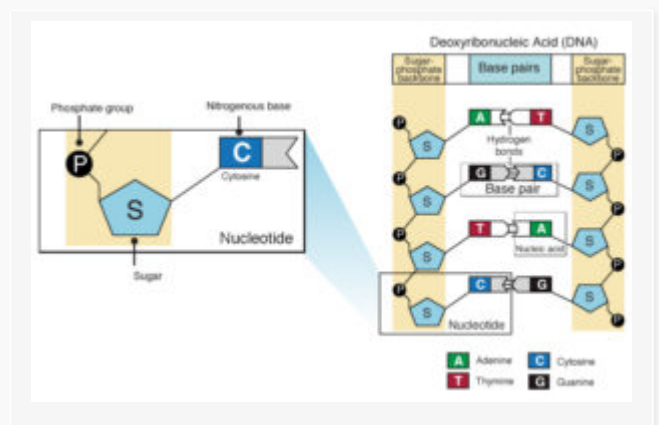
The trial also sought to investigate the impact of NucleoPrime on fatigue. The researchers used both subjective measures of fatigue and plasma levels of cortisol. Participants reported high levels of fatigue 48 hours after the pre-supplementation training session. There was less fatigue noted 48 hours after the post-supplementation session, suggesting that NucleoPrime **may reduce fatigue**. The study also noted that plasma cortisol levels were lower after the post-supplement session compared to the pre-supplement session. However, it's important to note that these differences in fatigue measures did not reach statistical significance.[3] A 2013 double-blind trial published in *Nutrients* shows that nucleotide supplementation may improve time to exhaustion, peak heart rate, and peak running speed.[4] These improvements *were statistically significant* compared to the placebo group.

• Immune Health Benefits

The immune system benefits of nucleotide supplementation are well studied. A 2002 study shows that dietary nucleotide consumption may improve immune-system function.[5] The *mechanism at play* for this improvement is still under investigation, but there are theories:

Immune cells turn over – are you able to replace yours fast enough?

This improvement may arise from the *high turnover rate* of immune system cells. Immune cells, barring those *designed to stick around for a long time*, take the James Dean approach to life – they live fast and die young.[6] To replace these dead cells, the body needs nucleotides. Supplementation may provide the body with the resources it needs to get the immune system back on track.

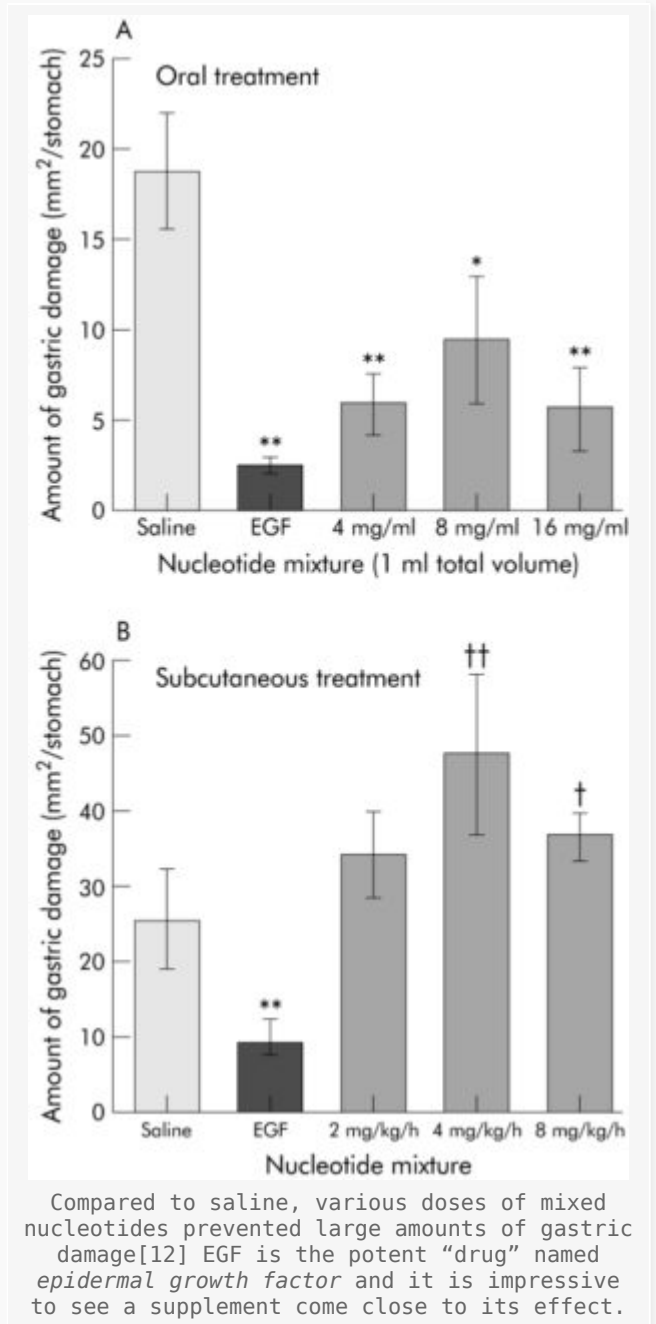


Nucleotide are the basic building block of nucleic acids, and RNA and DNA are polymers made of long chains of nucleotides. The bases used in DNA are adenine (A), cytosine (C), guanine (G), and thymine (T). In RNA, the base uracil (U) takes the place of thymine. Image courtesy National Human Genome Research Institute.

Exercise also induces a state of relative immunosuppression because of induction of physiologic stress.[7] This acute form of stress drives the *healthy* reaction to exercise. However, *chronic stress* can wreak havoc on proper immune system functionality by inducing longer-term immunosuppression.[8]

A 2018 trial in football referees shows immunoglobulin A (*IgA*) levels fall as cortisol levels rise.[9] **Nucleotide supplementation appears to increase IgA and natural killer cell activity.**[5] This suggests that nucleotide supplementation may help athletes mitigate the immunosuppression induced by intensive exercise. Nucleotides may also serve as a protective agent for living immune cells. A 2005 trial suggests that **nucleotide supplementation may help mitigate DNA damage** induced by high-fat diets.[10,11]

- **Gastric Health**



Gut health is likely the future of modern medicine, at least in the face of today’s processed food supply, which doesn’t seem to be going anywhere anytime soon. If you’re a health enthusiast and haven’t gone down that rabbit hole yet, we highly suggest spending time on *gastric microbiota research*.

Nucleotide supplementation appears to improve the gut’s ability to repair itself from injury by improving repair cell migration to sites of gastric injury.[12] Supplementation also may help prevent gastric damage from occurring.

Before we can *conclusively* state that nucleotide supplementation is gut-protective, we need to see human trials. Regardless, this finding *has us excited* for the future of gut health supplements, which are desperately needed given the state of our food industry.

Nucleotides also appear to improve symptoms of indigestion. A trial performed in patients with irritable bowel syndrome (IBS) suggests that **oral nucleotide ingestion may reduce IBS symptoms like diarrhea, abdominal pain, and bloating** in those predisposed to the condition.[13]

• Nootropic Benefits

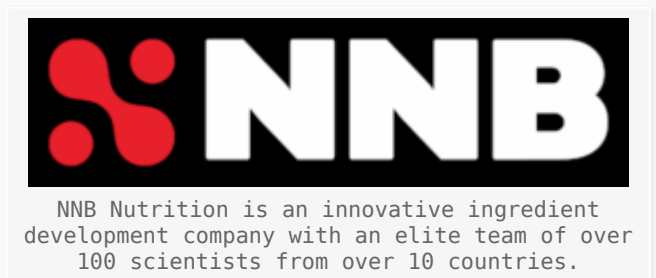
We know some of our readers *live for the nootropic products*, and nucleotide supplementation has data suggesting nootropic benefit. Two trials performed in mice-models suggest that **supplementation may help improve memory retention**. [14,15] One of these trials also measured levels of *lipofuscin* – a marker used in aging research. In mice treated with exogenous nucleotides, *lipofuscin* levels were lower throughout the brain compared to the control group.[15] These findings suggest that dietary nucleotide supplementation may support brain health.

Who should take NucleoPrime? And at what dosage?



NucleoPrime is a supplement we recommend for *anyone* looking to improve their general health, immunity, and stimulant-free energy. We can see NucleoPrime becoming a cornerstone of anti-aging stacks as well as cellular health supplements. It may even have a spot alongside creatine in some ATP-driven muscle building supplements as well as testosterone enhancement, as it provides some of the tools the body needs to grow and repair.

We think of nucleotide supplementation the same way that we see creatine, CoQ10, and PQQ – harmless additions to our day-to-day supplementation that can help health overtime.



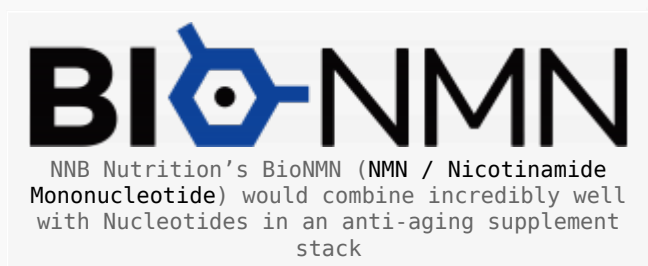
The most common use case of NucleoPrime will likely be in the anti-aging and cellular health space, where it'd stack wonderfully with NNB Nutrition's BioNMN,

a highly bioavailable NMN (Nicotinamide Mononucleotide) supplement that boosts NAD+ levels.

NucleoPrime dosage: 250mg twice per day

To get the most out of NucleoPrime, NNB recommends **250 milligrams twice per day**. NucleoPrime is safe to incorporate into food, beverages, powders, and even potent enough to fit into a capsule.

Outside of anti-aging applications, as nucleotide supplementation gains favor in the sports nutrition industry, we're hoping to see NucleoPrime integrated into high-end multivitamins, creatine supplements, and even post-workout recovery supplements. Product formulators are constantly looking for something new, and sometimes it's best to get back to the basics with the *building blocks* our bodies need. NucleoPrime achieves both of these issues.



For those seeking to replicate the NNB trial, we recommend taking **NucleoPrime after an intense workout** to reap the recovery benefits that nucleotides may offer. To maximize the immune health and neuroprotective elements of nucleotide supplementation, consider taking NucleoPrime *before and during* periods of high stress. Starting supplementation before stressful events is to ensure that the immune-bolstering benefits of supplementation have time to ramp up, as most trials use a 14-day supplementation window.[5]

Lab tests provided

**SPECIFICATION
NUCLEOTIDES**

| | | | |
|------------------|---|--|------------|
| Product Name | Nucleotides | | |
| CAS No. | AMP 61-19-8 | Molecular Weight | AMP 347.22 |
| | CMP 63-37-6 | | CMP 323.20 |
| | GMP 85-32-5 | | GMP 363.22 |
| | UMP 58-97-9 | | UMP 324.18 |
| Chemical Formula | AMP C ₁₀ H ₁₄ N ₅ O ₇ P | CMP C ₉ H ₁₄ N ₅ O ₈ P | |
| | GMP C ₁₀ H ₁₄ N ₅ O ₈ P | UMP C ₉ H ₁₃ N ₂ O ₉ P | |
| | | | |

| Test Item | Specification | Method |
|---------------------------------------|---|--------------|
| Physical and Chemical Analysis | | |
| Appearance | White to off-white powder | Organoleptic |
| Odor | Characteristic | Organoleptic |
| Assay (Total nucleotides, dry basis) | NLT 98.0% | HPLC |
| CMP (dry Basis) | 24% ~ 26% | HPLC |
| UMP, Na ₂ (dry basis) | 24% ~ 26% | HPLC |
| GMP, Na ₂ (dry basis) | 24% ~ 26% | HPLC |
| AMP (dry basis) | 24% ~ 26% | HPLC |
| Loss on Drying (120°C, 2 hours) | NMT 20% | USP <731> |
| Heavy Metals | | |
| | NMT 10 ppm | ICP-MS |
| Lead (Pb) | NMT 0.5 ppm | ICP-MS |
| Arsenic (As) | NMT 0.2 ppm | ICP-MS |
| Cadmium (Cd) | NMT 0.2 ppm | ICP-MS |
| Mercury (Hg) | NMT 0.2 ppm | ICP-MS |
| Microbiological Analysis | | |
| Total Plate Count | NMT 10000 cfu/g | USP <61> |
| Yeast & Mold | NMT 1000 cfu/g | USP <61> |
| E.Coli | Negative in 10 g | USP <62> |
| Salmonella | Negative in 10 g | USP <62> |
| S.Aureus | Negative in 10 g | USP <62> |
| Others | | |
| Storage Condition | Stored in tightly sealed container, away from moisture and direct sunlight. | |
| Packing | Double PE bags in a net 25kg cardboard drum. | |
| Shelf Life | 24 months from manufacturing date. | |

Product Name: NucleoPrime® Nucleotides

Version: NNB-SPEC-QA-012-0042-00

Updated Date: Dec 19, 2019

An example NucleoPrime Specification sheet, showing equal (24-26%) parts AMP, GMP, UMP, and CMP. More lab tests can always be provided by contacting us or NNB at NNBNutrition.com

Where to find NucleoPrime

The first pre-workout supplement to use NucleoPrime is now out: **AstroFlav One Scoop Only**. Learn more about it from the link above, and see if there are any other articles on nucleotides below:

All articles about NucleoPrime

- **ONE Scoop Only! AstroFlav's New Powerful Pre-Workout** Posted on: November 23, 2022
- **NucleoPrime by NNB Nutrition: Step Up Your Energy Production** Posted on: March 13, 2021
- **What are Nucleotides and How do they Affect Performance and Immunity?** Posted on: February 16, 2021

Conclusion: Nucleotides bring immunity, recovery, and cellular energy

NucleoPrime is likely the best form of a new industry innovation – but something *not* new to our bodies and diets. While the research is still developing in terms of ergogenic benefits, nucleotide supplementation appears to improve markers of general health, especially true in a world in an immunity crisis due to our collective processed food driven metabolic sickness.



PricePlow Blog Post

NNB

NUCLEOPRIME

What are Nucleotides? Meet the Building Blocks to Better Performance

Read more about the building blocks of DNA and RNA in our article on **nucleotides**.

For those looking to boost their anti-aging and immunity stack, NucleoPrime is worth trying. NNB Nutrition is one of few companies we trust to bring this level of innovation to market.

This product is also 100% natural, non-GMO, non-allergenic, *and even vegan friendly*. NNB pulled out all the stops with NucleoPrime so that everyone can partake in the boost. If you want to pioneer nucleotide supplementation, NucleoPrime is a great way to give your stack a little “something extra”.

*If you want to learn more about the background and biochemistry behind NucleoPrime, read our full article titled **What are Nucleotides and How do they Affect Performance and Immunity?**.*



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