



Promoting Healthy Aging

White Paper

These statements have not been evaluated by the Food and Drug Administration.
This product is not intended to diagnose, treat, cure or prevent any disease.

RiaGev[®] Does What No Other Ingredient Can

Everyone needs RiaGev, especially those who are concerned with bioenergetics, wellness, and healthy aging. It is the first and only commercially available proprietary composition uniquely combining Bioenergy Ribose[®] and vitamin B3 in the form of nicotinamide.

This is the Next Big Advancement for Your Product Portfolio

RiaGev's patented formulation enhances the salvage pathway resulting in increased bioavailability of foundational elements within the cells. It naturally heightens cellular health and balances the relationship between oxidative stress and energy production.

By virtue of their lifestyle, active, middle-aged, healthy adults tend to experience more premature aging and health-endangering oxidative stress than other age groups.

Only RiaGev promotes healthy aging, noticeably better quality of life and overall wellness by increasing nicotinamide adenine dinucleotide (NAD⁺) while simultaneously boosting adenosine triphosphate (ATP) and glutathione (GSH). NAD⁺, ATP and GSH go hand in hand. You can't have one without the other, meaning you must have energy (ATP) present for the transfer of NAD⁺ to GSH as part of the biological exertion. All three biomarkers are energy (ATP) dependent. RiaGev is the only healthy aging booster that targets all three biomarkers in a single ingredient solution.

Even more remarkable, research shows it also supports improvements in overall energy, sleep and glucose metabolism.

With RiaGev, there's tremendous untapped potential for helping people live healthier, longer and more active lives.



Why Ongoing NAD⁺ Research is Important

The skyrocketing interest in NAD⁺ boosting supplementation shows no signs of slowing. NAD⁺ is a critical coenzyme essential to ATP production, but age-related changes in mitochondria are associated with a decline in NAD⁺ production.

Research shows human NAD⁺ levels decrease by at least 50% as early as in our 40s, which translates into a very negative impact on healthy cell production and longevity.

Increasing our understanding of NAD⁺'s role in human health, and how to enhance and maintain healthy NAD⁺ production, are critical to supporting the wellness of our aging population.

Understanding NAD⁺'s Significance

NAD⁺ is a coenzyme and essential metabolite in all human cells. It plays a key role in cellular metabolism and energy production. It is vital for mitochondrial health. High NAD⁺ levels are essential for DNA repair and recovery in a health crisis.

As a coenzyme, NAD⁺ and its related metabolites, NADH, NADP⁺ and NADPH, participate in over 60% of the reactions in cellular metabolism and energy production.

NAD⁺ is a rate-limiting co-substrate for sirtuins (longevity regulators), which play key roles in the calorie restriction method of life extension and exercise response. NAD⁺ also inhibits CD38, which is present as a result of accumulated oxidative stress. Studies show that inhibiting CD38 mitigates oxidative stress. CD38 is mediated by the NAD⁺/NADH ratio. Alternatively, drug inhibition of CD38 restores NAD⁺ levels.

Here's What Makes RiaGev Better

The existing NAD⁺-enhancing products, including NR and NMN, provide a precursor for NAD⁺ synthesis. For NAD⁺, NMN or NR to be absorbed, they must be broken down to their components, which are nicotinamide, D-ribose and other elements. Why not go straight to the source, pre-formulated in the ideal performance ratio?

With RiaGev, the body doesn't have to go through the process of first breaking it down to make it bioavailable and risk losing its effectiveness during digestion. You might be surprised, but only a small portion of oral supplements survive absorption. Only RiaGev provides two precursors that work synergistically in the NAD⁺ salvage pathway in free form. Research demonstrates that this combination is very effective in increasing NAD⁺ levels in the body.

Scientists have also determined that RiaGev significantly increases the NAD⁺ metabolome, including NAD⁺, NADP⁺ and NADPH, all of which are pivotal for human health and critical to antioxidant cycling like glutathione. Most precursors can't make this claim, as RiaGev does.

*Jinfiniti's proprietary *Intracellular NAD™* test is the only commercially available test of its kind on the market and helps users find the right delivery strategy, supplementation type, brand, and dosage to optimize their NAD⁺ levels.

New Science Proves RiaGev is a Groundbreaking Ingredient

The objective of this 28-day study was to evaluate RiaGev's effectiveness after extended, everyday use in a set of conditions designed to simulate the lifestyle of everyday people. It involved 27 healthy, middle-aged adults, using a proprietary intracellular NAD⁺ assay developed by a team of researchers at the Medical College of Georgia. The population was selected to represent working adults, for whom stress is abundant. More specifically, these people's stress levels, indicated by circulating cortisol, were elevated to unhealthy degrees.

The researchers determined that 1,520 mg of RiaGev:

- Continues to raise NAD⁺ levels with extended once-daily and twice-daily use over 28 days as well as showing a significant upward trend in data at significantly lower doses;
- Supports the continuous accumulation of NAD⁺ in the body, even at smaller dosages;
- Significantly reduces overall blood glucose while also reducing levels of glycated serum protein, which is a marker for increased diabetes risk;
- Continually reduces levels of cortisol, the primary adrenal stress hormone. This particular data marker is profound and atypical of a cortisol-lowering dietary ingredient.



Summary of the Extended Study of RiaGev Supplementation

A: RiaGev Enhances NAD⁺ Levels

High NAD⁺ levels are essential for DNA repair, cellular health, mitochondria health and recovery during a health crisis. Elevating NAD⁺ is valuable because NAD⁺ is a rate-limiting co-substrate for sirtuins (longevity regulators).

RiaGev safely enhances the NAD⁺ salvage pathway and increases the efficient utilization of NAD⁺ in all tissues. Boosting the salvage pathway gives RiaGev a distinct advantage over other ingredients in this category because the salvage pathway is where up to 90% of the NAD⁺ conversion happens, and it is also regulated by ATP.

NAD⁺ is pivotal to helping people live healthier, longer lives. Scientists have started to realize that the common cause behind both aging and disease is mitochondrial dysfunction. By boosting NAD⁺ levels over an extended period of time, RiaGev prompts the creation of new mitochondria while it also helps reduce age-related cognitive decline, increases energy levels and supports a stronger immune system among other healthy aging benefits.

The NAD⁺ blood levels of participants supplementing with RiaGev were measured using a revolutionary, recently developed home-based test method* [<https://www.jinfiniti.com/products/>] at time zero (baseline) and again at 14 days and 28 days after RiaGev supplementation.

The NAD⁺ level ratios between the supplemented over baseline are presented in Figures A1 and A2.

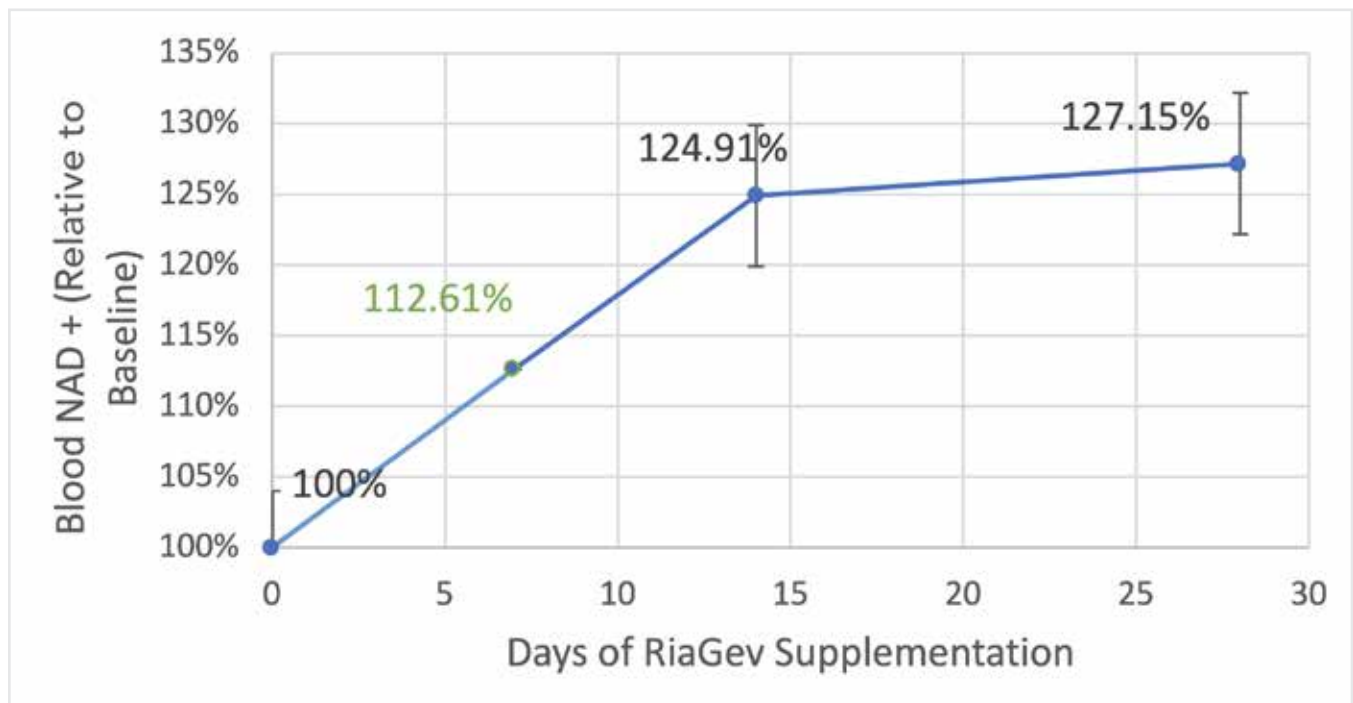


Figure A1: Blood NAD⁺ Levels Relative to Baseline After Daily RiaGev Supplementation. Data points for 0, 14, and 28 days (blue dots) are from volunteers who took 1,520 mg of RiaGev twice daily.

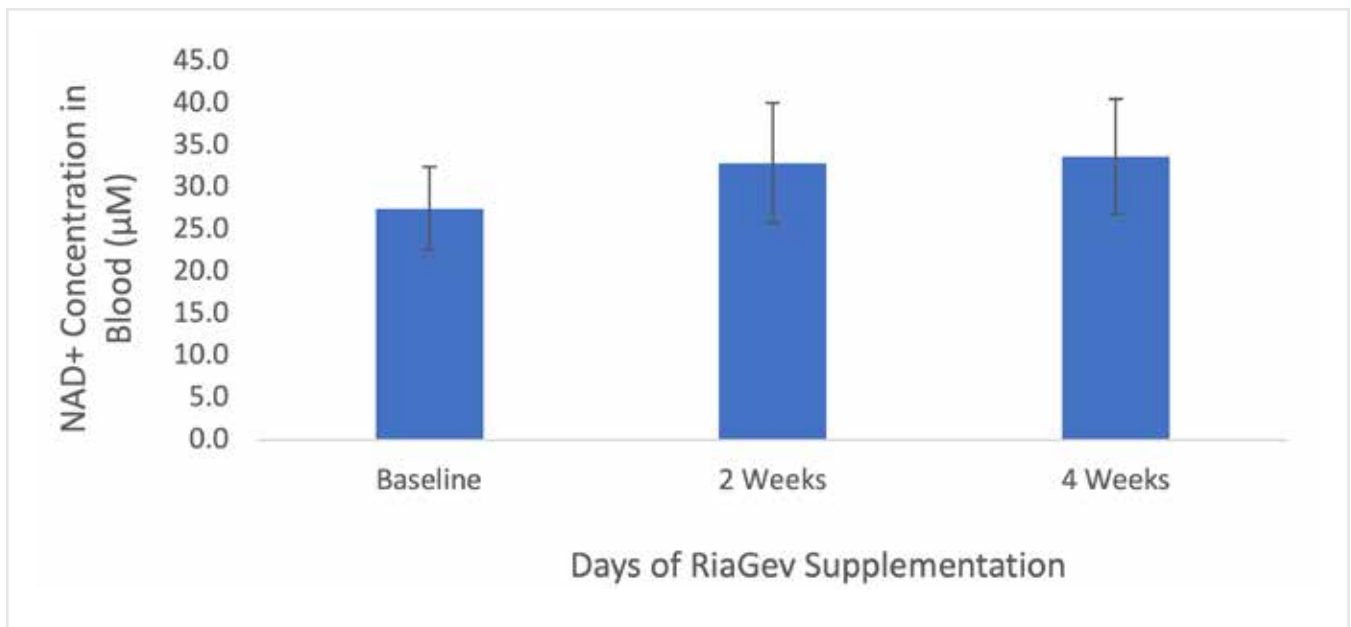


Figure A2: Blood NAD⁺ Concentrations Before and After RiaGev Supplementation. There is a significant increase in NAD⁺ concentration after RiaGev Supplementation. The p-values are less than 10⁻⁴ and 10⁻⁶ for 2 weeks and 4 weeks, respectively.

Data analysis: Results show NAD⁺ levels continue increasing almost linearly for two weeks to reach about 125% over baseline level ($p < 0.001$), after which the NAD⁺ levels continue increasing at a rate to 127% at week 4 ($p < 0.001$). This data curve is in line with any NAD⁺-boosting dietary ingredient.

B: Dosing Options

While a twice-daily dose of RiaGev significantly enhanced NAD⁺ production, we know that formulators want dosage options. Would taking 1,520 mg of RiaGev once daily instead of twice daily (half dose) also be effective? Yes! With the half dose, it just took twice as long to accumulate the same amount of NAD⁺ as with the full dose. In addition, our compilation data demonstrated a curve at doses as low as 760 mg (half of 1,520 mg) indicating similar effects. So, depending on the serving size and finished product supply there are a variety of dosing options best suited for your finished product.

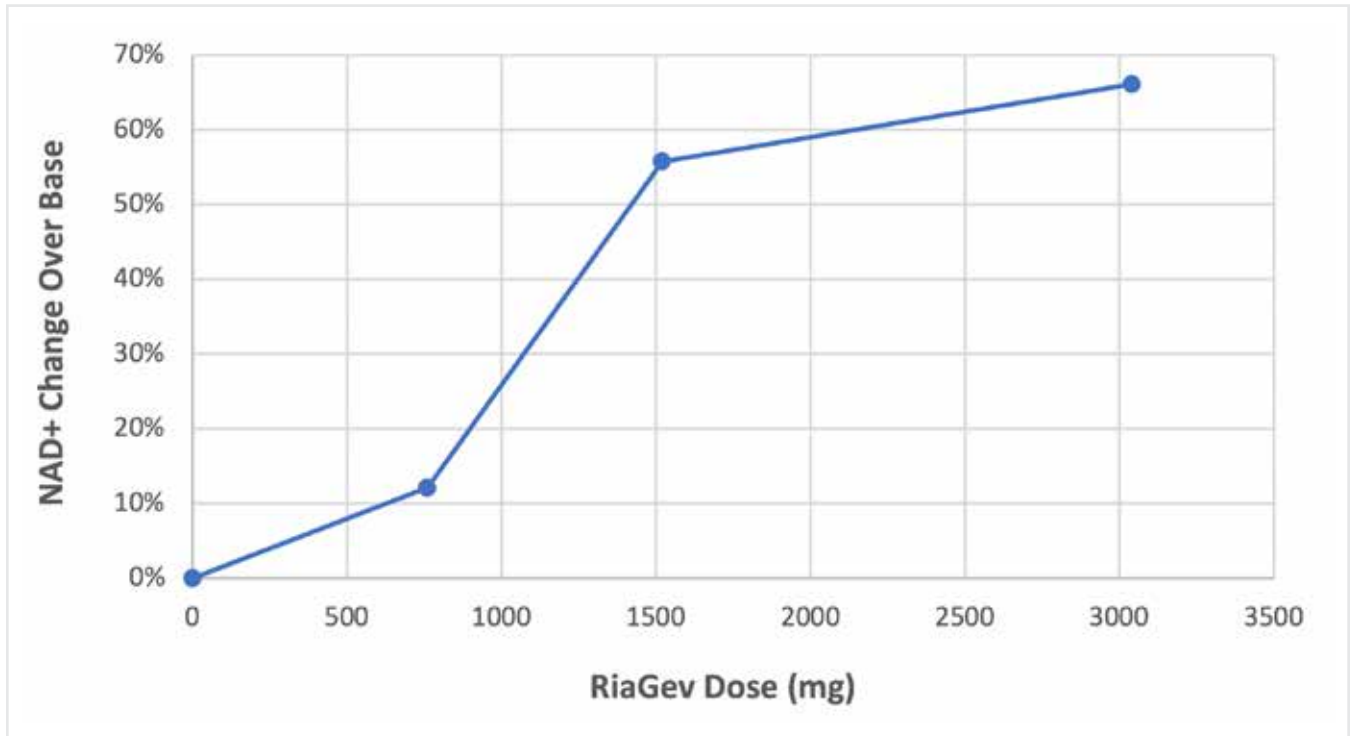


Figure B1: Pre-Clinical Dose Response Data. 3,040 mg daily (1,520 mg BID) for over 7 days for Loading or Acute Treatment. 1,520 mg daily (760 mg BID) for over 14 days for boosting NAD⁺ and energy. 760 mg daily for long term rejuvenating NAD⁺ level in the body.

Displays dose-response relationship of RiaGev and NAD⁺ in the blood.

Dose response is dependent on serving size/dosing schedule.

To test the effective dose of RiaGev for NAD⁺ enhancement in everyday use, volunteers who took once-daily 1,520 mg of RiaGev were also studied for their NAD⁺ levels in blood using the same home-based test method. Their NAD⁺ level ratio between supplementation over baseline is presented in Figure B2.

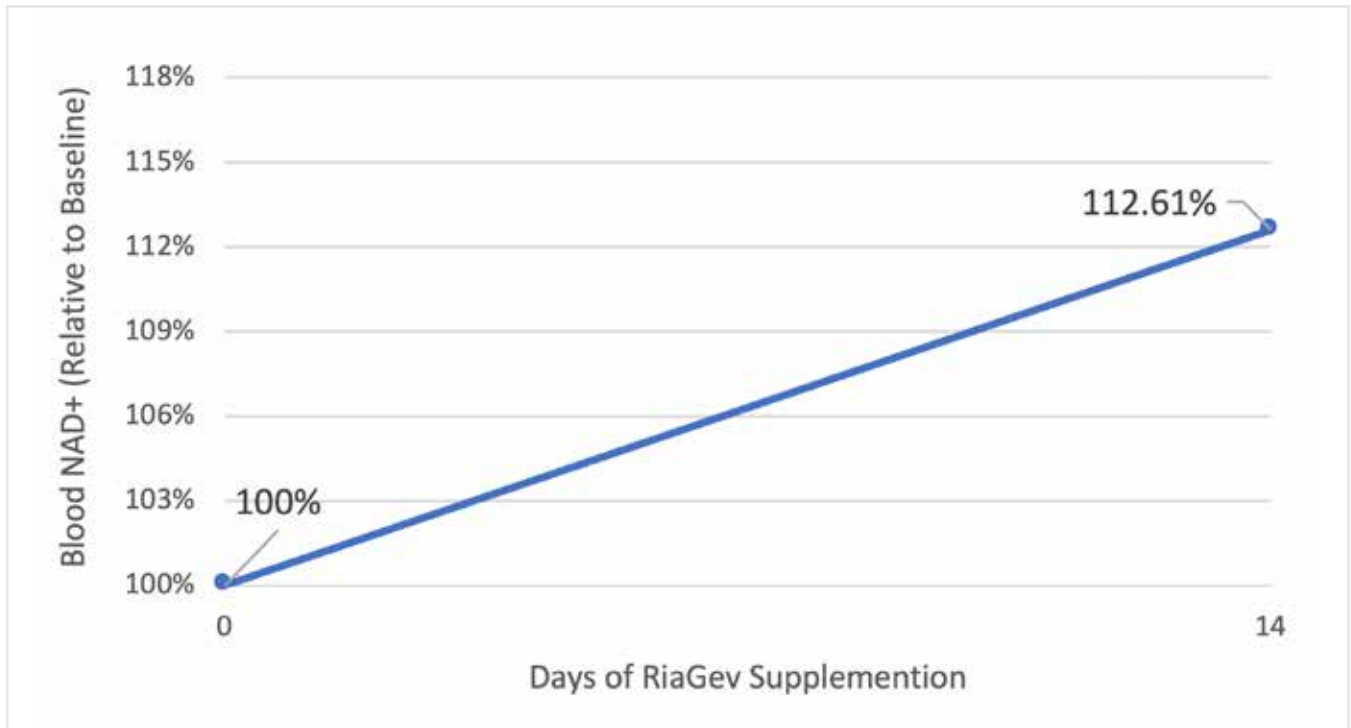


Figure B2: Blood NAD⁺ Levels Relative to Baseline After RiaGev Daily Supplementation. Data point for Day 7 of the 14-day analysis is from volunteers who take RiaGev at 1,520 mg once daily (half dose) for 14 days.

In Figure B2, the average NAD⁺ level from the half dose (1,520 mg once daily) RiaGev supplementation for 14 days fits exactly in the spot of 7 days full-dose supplementation. This is expected because the RiaGev-driven NAD⁺ production is cumulative in the body. It takes twice as long to produce the same amount of NAD⁺ when the dose is halved. On the other hand, the NAD⁺ level variation for the half dose is much larger than the full-dose supplementation. This may reflect a larger interpersonal variation in NAD⁺ production when RiaGev dose is sub-optimal.

C: RiaGev Reduces Glycated Serum Protein (GSP)

It was already known that RiaGev significantly reduces overall blood glucose without significant changes in insulin secretion. This suggested improved insulin sensitivity, glucose tolerance, and glucose throughput.

In this study, we evaluated whether this RiaGev benefit could result in reduced glycation. Glycated serum protein (GSP) is a measure reflecting the average blood glucose level in the 2-4 week period. Elevated GSPs such as HbA1c may indicate an increased risk of diabetes, and this is commonly used as a diagnostic biomarker. As shown in Figure 3, RiaGev supplementation leads to a reduced GSP level in 2 weeks and 4 weeks.

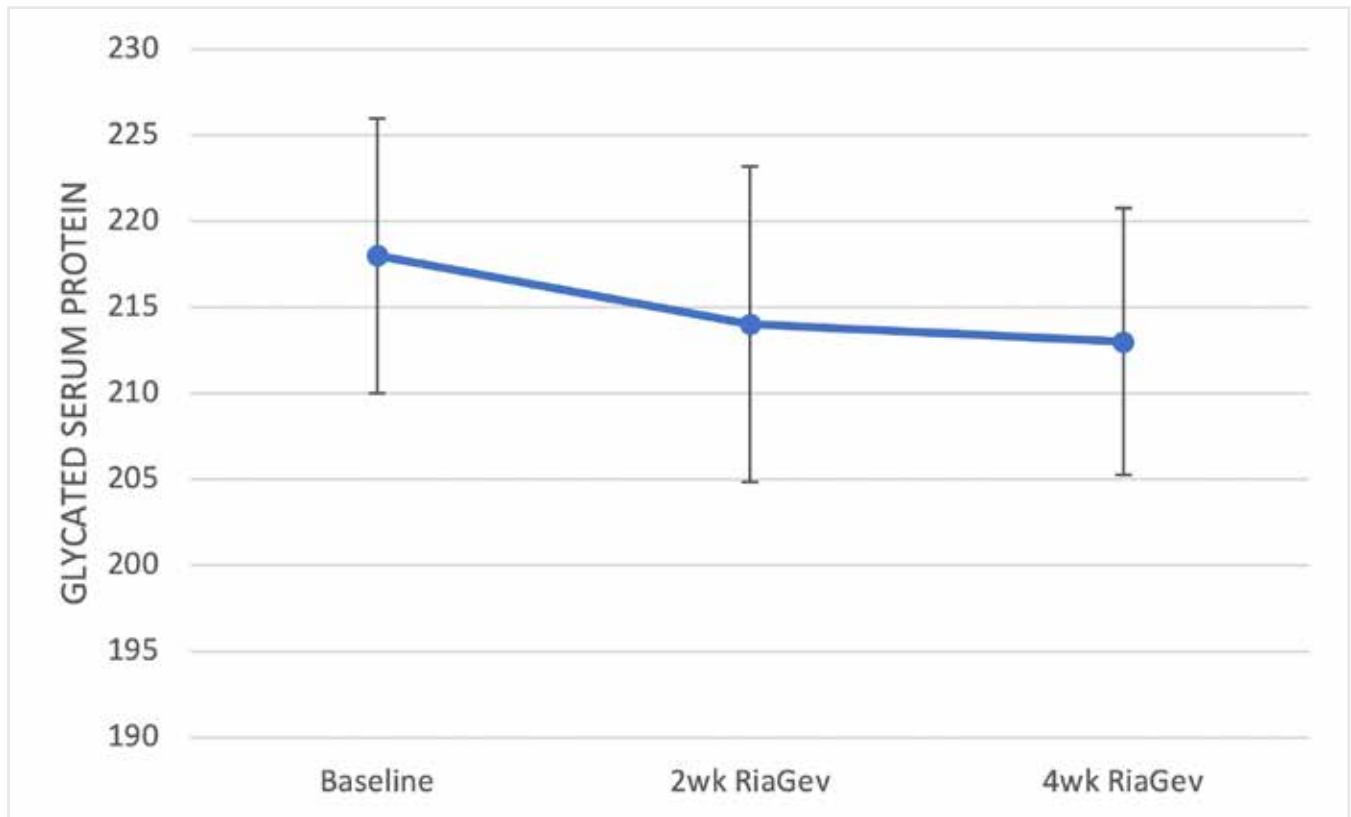


Figure C: Glycated Serum Protein (GSP) After RiaGev Supplementation. RiaGev supplementation leads to lower glycated serum protein levels, especially for women, with *p*-values of 0.093 and 0.036 at 2 weeks and 4 weeks, respectively.

While this has been previously demonstrated to lower blood glucose for a short time period, this smooth drop in glucose and insulin, which continued over a long time period, was an unanticipated benefit of RiaGev. Another interesting finding: The RiaGev group experienced less intense blood glucose spikes after eating carbohydrates. And it did this without additional insulin.

D. Steady Reduction in Cortisol Level

Everyone wants to age gracefully. There is often a direct correlation between signs of aging and elevated levels of cortisol, the primary stress hormone.

You can't optimize health without addressing the deleterious effects of stress that can accumulate over time. These results indicate that RiaGev helps people to relax. By steadily and significantly reducing cortisol among healthy adults, RiaGev may also help to minimize the signs of aging.

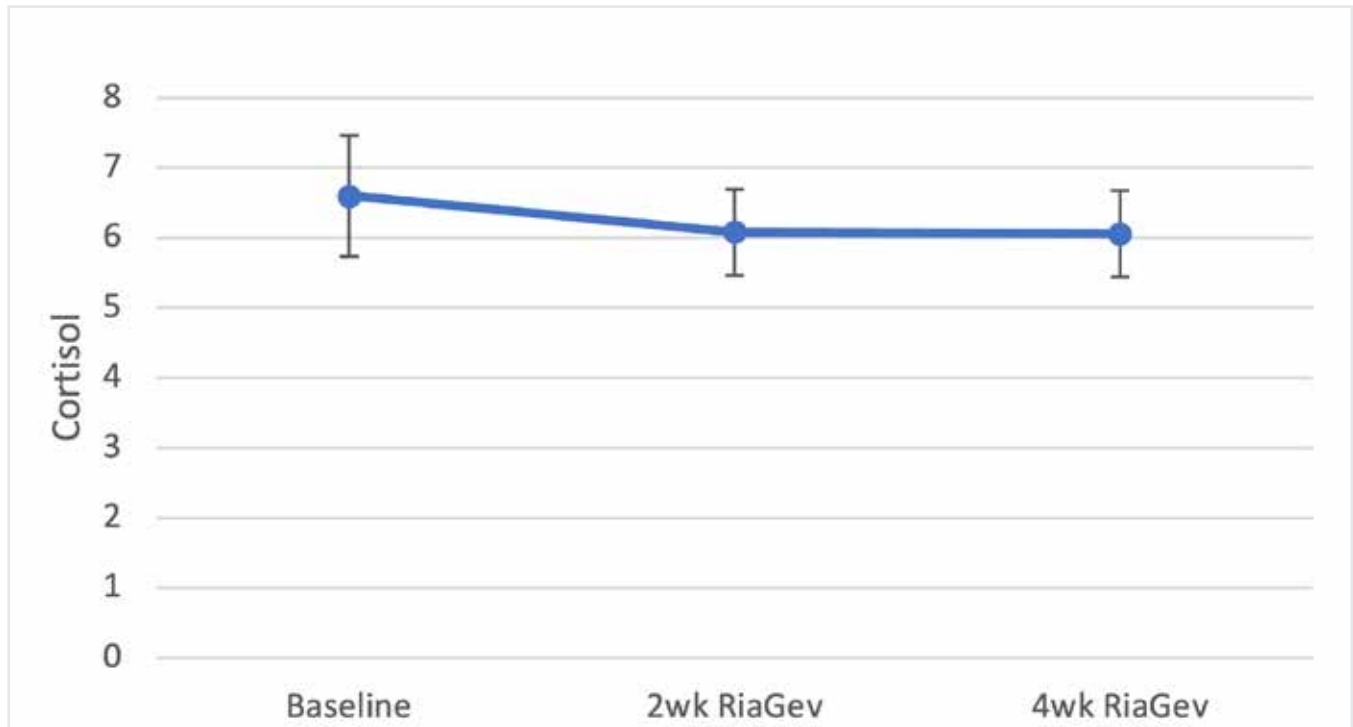


Figure D. Waking Salivary Cortisol Upon RiaGev Supplementation. Salivary cortisol was measured 15 minutes after waking in the morning. It is slightly reduced and kept at a steadily lowered level during the 4-week supplementation period.

Waking salivary cortisol was significantly lowered and remained steady with RiaGev supplementation. A steady reduction of waking salivary cortisol was observed at the 2-week mark while tapering off at the 4-week mark after RiaGev supplementation. This steady reduction and tapering off effect is in line with the management of cortisol reduction via a dietary ingredient, and is consistent with improved glucose use efficiency.

E. RiaGev Supplementation is Safe and Effective for Extended Use and at Multiple Lower Dosages

While RiaGev delivers results never before seen in a single-ingredient solution, it was critical to also verify its safety. Key blood parameters, especially for liver and kidney functions, were monitored during RiaGev supplementation. These included measuring blood albumin (ALB), alkaline phosphatase (ALP), alanine aminotransferase (ALT), Creatinine (CRE), and Creatine Kinase (CK). None of these parameters had significant changes during the 4-week RiaGev supplementation period. Creatine kinase (CK) was slightly lowered, and albumin slightly elevated, in the blood after the RiaGev supplementation.

Together, these parameters demonstrate that RiaGev is safe to use every day for extended periods.

Conclusion

This extended study further demonstrated that RiaGev is safe and effective to use in everyday supplementation for extended periods of time, and with multiple dosages.

- RiaGev's ability to enhance NAD⁺ levels was shown to be cumulative and almost linear.
 - Twice daily doses of 1,520 mg enhance NAD⁺ levels to 127% of baseline in four weeks.
 - A once daily dosage of 1,520 mg effectively enhances NAD⁺ levels at half the twice daily rate. This indicates that a daily 760 mg dose will be as effective after 60 days as the twice-daily 1,520 mg dose.
 - Doses lower than 1,520 mg indicate similar effects over longer periods of time.
- RiaGev significantly reduces blood glucose levels and lowers serum protein glycation, suggesting improved insulin sensitivity and glucose tolerance.
- Additionally, it steadily lowers salivary cortisol, suggesting that it lessens the effects of everyday stressors. The lowered waking salivary cortisol remained in a steady downward trend with RiaGev supplementation.

The RiaGev group also consistently scored greater improvements than the placebo on physical fatigue, mental concentration, motivation and physical activities, as assessed by the standard Checklist Individual Strength (CIS) questionnaire.

Re-imagine your possibilities

What are you missing in your product line up? Fill those gaps. Better yet, lead a category!

RiaGev is a groundbreaking ingredient that can be used as a stand-alone product or in functional foods and beverages, dietary supplements, and cosmetic applications.

RiaGev:

- Increases NAD⁺ production and improves cellular metabolism;
- Maintains healthy mitochondria;
- Improves cellular repair and stress resistance;
- Supports concentration and motivation while reducing fatigue;
- Supports improved cognitive function and quality of life;
- Supports smoother, younger-looking skin from the inside out.

And even though the total mass is higher because there are two ingredients, the price per dose is very cost effective. This makes RiaGev a logical choice in the healthy aging category as opposed to other NAD⁺ boosters on the market.

Research continues to further validate RiaGev's value and safety, and showcase its unprecedented effectiveness targeting several sought-after consumer categories.

Bioenergy RiaGev contains a blend of Non-GMO Project Verified Bioenergy Ribose and Non-GMO encapsulated nicotinamide. Bioenergy RiaGev also meets Non-GMO standards referenced in European Directive 2001/18/ED, Regulation (EC) No. 1829/2003, and Regulation (EC) No. 1830/2003.



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