

miricell™

RICE GERM POLYAMINES



Sales & Science Brief

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SALES & SCIENCE BRIEF

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POLYAMINES

Polyamines, including spermidine, spermine and putrescine, are synthesized in every living cell and are contained in foods, especially in those considered to contribute to health and longevity. They have many physiological functions, such as antioxidant properties, cell and gene protection, and **autophagy activation** (i.e., the body's process of breaking down old and damaged cell parts and repurposing the salvageable components into new, usable cell parts). Research has reported that increased polyamine intake (primarily spermidine) over a long period extended the life span of mice¹, and promoted a healthy lifespan in humans². Laboratory research in human fibroblast cells has also shown that **Miricell™ Rice Germ Polyamines** was able to reduce the shortening of telomeres³, a type of “sacrificial” DNA needed for lifespan and maintaining wellness.

Unfortunately, both autophagy and cellular levels of spermine and spermidine^{5 6 7} tend to decrease during the aging process. Fortunately, supplementation with **Miricell™ Rice Germ Polyamines** can help compensate.

COMPLEMENT TO, OR ALTERNATIVE FOR, NAD PRECURSORS

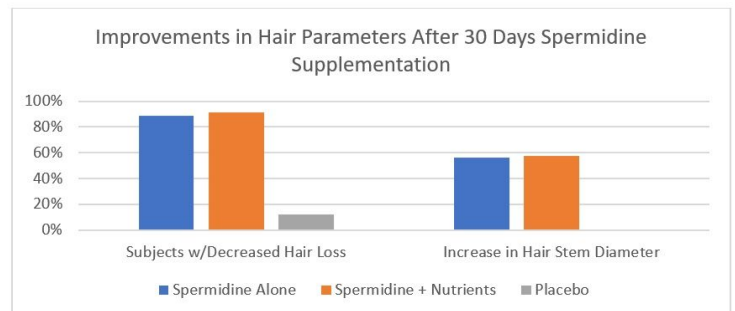
NAD+ (nicotinamide adenine dinucleotide) is an important coenzyme associated with healthy aging⁸, and NMN (nicotinamide mononucleotide) is a primary precursor to NAD+. Unfortunately, the FDA has indicated that NMN is not a lawful dietary ingredient. While there are other NAD+ precursors, this position has still left a gap in the market.

Over the past decade, research has revealed that NAD+ consuming enzymes can directly regulate autophagy in cells, and autophagy deficiency depletes NAD+. This indicates a role for autophagy in NAD maintenance. Therefore, NAD+ and autophagy form a bidirectional feedback relationship which may be linked to longevity and age-related health maintenance⁹. Support for the autophagy-NAD+ connection can be achieved through the use of nutraceuticals that promote autophagy, and with nutraceuticals that are precursors to NAD+.

As an autophagy promoter, **Miricell™ Rice Germ Polyamines** can serve as an excellent complement to NAD+ precursors, providing the basis for a more comprehensive and competitive “anti-aging” formulation that is additive to and goes beyond NMN and other NAD+ precursors. Likewise, for those brand owners who want to avoid any potential regulatory entanglements from the use of NMN, Miricell™ spermidine is the nutraceutical of choice as an alternative for NAD+ precursors.

RESEARCH ON POLYAMINES

Extensive research, including human clinical studies, has been conducted on polyamines (especially spermidine). In addition to its healthy aging properties, this includes human studies demonstrating polyamines benefit for maintaining healthy hair (see graph), promoting healthy cognitive function, and supporting hormonal health. In addition, preclinical research has demonstrated the potential benefits of polyamines as a caloric restriction mimetic, for pre- and postnatal development, for cardiovascular health, for blood sugar maintenance and for healthy eyes. *Request our Miricell white paper for a more complete presentation of the data.*



NATURAL VS. SYNTHETIC SPERMIDINE

There are important reasons to consider the use of natural polyamines rather than synthetically derived materials. Four of the reasons for this include: 1) synthetic spermidine has only been tested in mice, not in humans or even primates, whereas food-derived spermidine has been in the human food supply for millennia and has a very good safety profile as a result; 2) synthetic spermidine does not come with the other polyamines that normally accompany spermidine in nature; 3) the presence of the other naturally occurring polyamines provides a recycling loop whereby the body is able to produce more spermidine, not just the amount given in the daily dose itself¹⁰; and 4) heretofore there has been no studies in which the synthetic form was directly compared with the natural form and shown to have equivalent efficacy.

MIRICELL™ RICE GERM POLYAMINES

Miricell™ Rice Germ Polyamines is a natural, non-GMO, vegan, allergen-free (including gluten-free), sustainable, and complete spermidine with other naturally occurring polyamines. It is Star-K Kosher Certified, and AHF Halal Certified. It is derived from rice germ, a byproduct of modern milling whereby brown rice is processed into white rice.

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The rice germ is typically disposed of as waste or used for animal feed purposes. **Miricell's™** upcycled use of the otherwise wasted rice germ not only transforms it into a nutraceutical with significant health benefits, but also respects and fully uses natural resources for a sustainable future.

STRUCTURE/FUNCTION CLAIMS

NOTE: The following structure/function claims are, to the best of our knowledge and expertise, compliant with the regulations established by The Dietary Supplement Health & Education Act of 1994 (DSHEA). Nonetheless, we recommend that you review any structure/function claims for your branded products with your regulatory attorney or other regulatory expert prior to using them.

Autophagy-related claims

- Natural polyamines have been shown to increase autophagy—the body's process of breaking down and recycling old and damaged cell parts.†
- In population research, the dietary intake of natural polyamines helped promote a healthy lifespan.†
- Autophagy supports NAD production and vice-versa, so a combination of autophagy promoters and NAD precursors may offer distinct advantages.†

Aging-related claims

- Cellular levels of polyamines tend to decrease with age.†
- In animal and human population research, increasing intake of polyamines helped promote a healthy lifespan.†
- The intake of natural polyamines can promote the length of telomeres, the “sacrificial” DNA associated with a healthy lifespan.†
- A laboratory study using **Miricell™** rice germ polyamines showed a lower shortening rate of telomeres in human cells compared to untreated control cells.†

† 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.

Hair health-related claims

- Natural polyamines in combination with other nutrients have been shown to help maintain healthy hair.†
- Natural polyamines in combination with other nutrients have been shown to support the anagen phase of hair growth.†
- Natural polyamines in combination with other nutrients have been shown to help reduce hair shedding.†
- Natural polyamines in combination with other nutrients have been shown to help promote hair thickness.†
- Research indicates that supplementation with natural polyamines is more effective for hair health than supplementation with biotin.†

Cognitive-related claims

- Natural polyamines have been shown to promote cognitive performance.†
- Natural polyamines have been shown to promote memory performance.†
- In population research, natural polyamine intake was associated with positive memory scores.†

Hormone-related claims

- Polyamine supplementation helped support healthy cortisol levels in men and women.†
- Polyamine supplementation helped support healthy DHEA levels in men and women.†
- Polyamine supplementation helped support healthy testosterone levels in men and women.†
- Polyamine supplementation helped support healthy progesterone levels in men and women.†
- Polyamine supplementation helped support healthy estrogen (estradiol) levels in men and women.†

Cardiovascular-related claims

- In animal research, natural polyamines have been shown to promote arterial health.†
- In animal research, natural polyamines have been shown to promote heart health.†
- In animal research, natural polyamines provided cardioprotective effects by promoting cardiac autophagy.†

REFERENCES

1. Soda K. Cells. 2022 Jan 4;11(1):164.
2. Kiechl S, et al. Am J Clin Nutr. 2018; 108:371–80.
3. Study Report for Nutraland: In vitro proliferative and telomere length analysis (TAT). LifeLength. January 17, 2023: 23 pgs.
4. Aman Y, et al. Nature Aging. 2021; 1: 634–50.
5. Minois N, et al. Aging. 2011; 3:716–32.
6. Nishimura K, et al. J Biochem. 2006; 139:81–90.
7. Soda K, et al. J Nutr Sci Vitaminol. 2009; 55:361–6.
8. Aman Y, et al. Transl Med Aging. 2018; 2:30–37
9. Wilson N, et al. Trends Cell Biol. 2023 Mar 4:S0962-8924(23)00023-5.
10. Kenny L. Food-derived vs. synthetic spermidine and dosage. January 17, 2003. Retrieved June 28, 2023 from <https://oxfordhealthspan.com/blogs/aging-well/food-derived-vs-synthetic-spermidine-and-dosage#:~:text=While%20synthetic%20spermidine%20mimics%20the,such%20as%20spermine%20and%20putrescine.>

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