

Spermidine & Autophagy Guide

What Spermidine Does

Spermidine is a naturally occurring polyamine found in every human cell. Levels decline with age. It is one of the most studied natural inducers of autophagy — the cellular process that clears damaged proteins and organelles. Autophagy decline is linked to neurodegeneration, cardiovascular disease, and cancer risk, which is why restoring spermidine intake has drawn research interest.

The Evidence, Briefly

Nature Medicine: dietary spermidine extended lifespan and reversed age-related cardiac dysfunction in mice via autophagy induction.

Bruneck Study (20-year prospective, Italy): the highest third of dietary spermidine intake was associated with lower all-cause mortality versus the lowest third — a difference researchers estimated as roughly equivalent to 5.7 years of aging.

Human randomized trial data remains limited. Current evidence is strong in animal models and observational human data, not yet confirmed by large-scale human RCTs with hard longevity endpoints.

Top Food Sources (spermidine content)

- ☐ Wheat germ — richest common source; basis for most supplements
- ☐ Aged, fermented cheeses (e.g. cheddar, parmesan)
- ☐ Mushrooms — especially shiitake
- ☐ Soybeans and natto (fermented soy)
- ☐ Legumes — peas, lentils, chickpeas
- ☐ Whole grains and bran

Supplementation Checklist

Choosing a Supplement

- ☐ Label states milligrams of spermidine directly — not just total wheat germ extract weight
- ☐ Stated purity percentage for extract-based products
- ☐ Third-party lab testing disclosed (this category is largely unregulated)
- ☐ No unnecessary proprietary blends obscuring actual dose
- ☐ Manufactured in a GMP-compliant facility

Practical Dosing Notes

Human trials have generally used 1-6mg of pure spermidine daily. Supplements vary widely in how potency is reported, which makes cross-product comparison difficult — always check for a directly stated spermidine milligram amount.

Spermidine is typically taken once daily, with or without food. Effects on markers like autophagy activity are not something you feel directly — this is a long-horizon intervention, not a short-term one.

Realistic Expectations

Treat spermidine as a diet-first intervention supported by promising but early-stage supplementation research. Prioritize the food sources above; consider supplementation as an addition, not a replacement, and set expectations based on the strength of current evidence — strong in animal models, observational and early-stage in humans.