

The Surprising Role of Cortisol in Alzheimer's

Analysis by [Dr. Joseph Mercola](#)

November 26, 2025

STORY AT-A-GLANCE

- New research shows that people with Alzheimer's have higher cortisol levels and a skewed cortisol-to-DHEA-S ratio, revealing that chronic stress drives early brain degeneration long before memory loss appears
- Cortisol, your body's main stress hormone, damages neurons and disrupts energy metabolism when it stays elevated, while DHEA-S acts as a protective neurosteroid that helps your brain resist inflammation and oxidative stress
- Bioenergetic researcher Georgi Dinkov connected these findings to thyroid and metabolic health, showing that when your cells don't produce enough energy, cortisol rises and accelerates cognitive decline
- Tracking your cortisol-to-DHEA-S ratio offers a powerful early warning sign for chronic stress and neurodegeneration, allowing you to take preventive action years before symptoms develop
- You can rebalance these hormones naturally by fueling your metabolism with adequate healthy carbohydrates, improving sleep and light exposure, reducing overtraining, practicing calming breathwork, and using natural progesterone to help quiet cortisol

Alzheimer's disease doesn't begin with memory loss — it begins years earlier with a slow, silent shift in your body's stress chemistry. Long before neurons die, your brain's hormonal balance starts to erode under constant pressure from everyday stress. The same hormones that once kept you alert and focused start working against you, wearing down your brain's repair systems and disrupting the flow of energy your cells depend on.

Cortisol, the body's main stress hormone, plays a central role in this process. When it stays high for too long, it drains your metabolic reserves and interferes with memory formation. Meanwhile, a second hormone called DHEA-S acts as cortisol's natural counterbalance, helping protect neurons and stabilize brain function.

When the ratio between these two hormones tilts toward cortisol, your brain loses its resilience and becomes more vulnerable to aging and degeneration. This hormonal tug-of-war — shaped by stress, diet, and metabolism — has drawn new attention from researchers exploring why some people develop Alzheimer's while others do not. The latest findings suggest that long-term hormonal imbalance, not just genetics or plaque buildup, could be one of the earliest warning signs of decline.

Understanding this relationship changes how you think about prevention. By strengthening your metabolism, restoring hormonal balance, and reducing chronic stress, you can support your brain's ability to heal and adapt — long before symptoms appear. The new research provides a roadmap for how to start.

Stress Hormones Tip the Balance Toward Alzheimer's

A clinical study published in *Cureus* examined 85 adults in Serbia — 45 with diagnosed Alzheimer's disease and 40 healthy peers of similar age and sex — to determine how two hormones, cortisol and DHEA-S, relate to brain health.¹ Cortisol is your body's main stress hormone, while DHEA-S (dehydroepiandrosterone sulfate) acts as its built-in counterbalance — a neurosteroid that supports brain resilience and energy metabolism.

Unlike **DHEA**, which is the fast-acting, active form, DHEA-S is its sulfated storage form that circulates in your blood far longer and provides a more stable picture of long-term stress balance. By focusing on DHEA-S, the researchers could better gauge chronic stress effects on the brain rather than short-term fluctuations. The scientists wanted to know whether Alzheimer's patients showed measurable differences in these hormones or in their ratio, which indicates how well your body manages prolonged stress.

- **People with Alzheimer's had higher cortisol levels but not lower DHEA-S** — Those with Alzheimer's showed cortisol levels averaging nearly 399 nanomoles per liter (nmol/L) — about 20% higher than healthy adults — yet their DHEA-S concentrations stayed roughly the same.

This imbalance means the stress response remains chronically activated without the brain's natural protection. When cortisol dominates, neurons experience more inflammation and less regeneration. The study also noted that this skewed balance was strongest among participants aged 65 to 75, suggesting that middle-to-late adulthood is when stress hormones begin exerting their most damaging effects.

- **The cortisol-to-DHEA-S ratio proved to be the real warning sign** — Although each hormone alone tells part of the story, the researchers emphasized that their ratio — how much cortisol outweighs DHEA-S — offers a clearer window into chronic stress and brain decline.

In Alzheimer's patients, that ratio climbed steeply, implying that the body's defense system against cortisol's toxicity was failing. This finding helps explain why some people with normal cortisol readings still experience cognitive decline: it's the imbalance, not just the level, that matters.

- **Men and women responded differently, revealing hormonal sensitivity** — In healthy adults, men had significantly higher DHEA-S levels than women, meaning their brains could have greater protection from chronic stress. But that sex difference disappeared in those with Alzheimer's.

The disease seemed to override normal hormonal patterns, flattening DHEA-S levels in both sexes. This means that once neurodegeneration begins, your brain's ability to maintain hormonal balance — one of its self-defense tools — breaks down.

- **Age changed the picture again, suggesting a nonlinear hormonal response** — When researchers divided participants by age, they noticed that younger Alzheimer's patients (60 to 65) had higher DHEA-S levels, which dropped sharply in the 66 to 75 group before rising again after age 75.

This unexpected curve points to a possible window of hormonal collapse, where midlife stress overwhelms the body's compensatory systems. If you're in this age range and facing chronic stress, that's when intervention — stress reduction, adequate rest, and metabolic support — could be most protective for your brain.

Cortisol Acts Like an Overzealous Cleanup Crew That Damages What It's Meant to Protect

Elevated cortisol increases inflammation and oxidative stress — chemical reactions that corrode neurons and disrupt communication between brain cells. It also suppresses the growth of new neurons in your hippocampus, the brain's memory center, making it harder to store new information.

In contrast, DHEA-S supports neuronal survival, enhances energy metabolism, and shields brain tissue from the harmful effects of excessive cortisol. When cortisol wins this hormonal tug-of-war, brain networks lose their flexibility and begin to deteriorate.

- **Why stress and memory loss are so tightly linked** — Chronic cortisol elevation interferes with glucose uptake in brain cells, depriving them of the fuel needed to form memories. It also increases amyloid-beta and tau accumulation — the same proteins that define Alzheimer's pathology.

Meanwhile, DHEA-S helps counter these effects by enhancing insulin sensitivity and calming overactive immune responses in your brain. In simple terms, one hormone burns your mental circuits, the other repairs them.

- **A new biological marker for early intervention** — Instead of waiting for memory loss or imaging changes, tracking your cortisol-to-DHEA-S ratio could signal early stress damage years before cognitive symptoms arise.

If your cortisol stays high while DHEA-S falls or stagnates, that's a red flag. Supporting your metabolic health, prioritizing quality sleep, and restoring hormonal balance could help keep your brain's internal environment stable long before

Alzheimer's develops.

Lowering Cortisol and Raising Metabolic Energy Could Reverse Brain Decline

In a commentary, bioenergetic researcher Georgi Dinkov analyzed the Cureus study showing that people with Alzheimer's disease had significantly higher cortisol levels and a skewed cortisol-to-DHEA-S ratio compared to healthy adults.² He explained that these results validate decades of bioenergetic research linking chronic stress, low metabolism, and neurodegeneration.

Dinkov emphasized that it's not just **elevated cortisol** that drives decline — it's the imbalance between cortisol and protective steroids such as DHEA, testosterone, and progesterone. When this ratio tips toward cortisol dominance, your body remains in a chronic “fight-or-flight” state that accelerates tissue breakdown and cognitive loss.

- **Dinkov connected the findings to thyroid-driven metabolic stress** — Building on the Cureus data, Dinkov explained that hypothyroidism — a **sluggish thyroid** that slows metabolic energy production — creates the same hormonal pattern seen in Alzheimer's patients: high cortisol and suppressed DHEA-S.

When your metabolism slows, your body compensates by ramping up stress hormones to stay alert and energized. But this backfires over time, leading to chronic brain inflammation, poor glucose uptake, and reduced adenosine triphosphate (ATP) production — the energy currency your brain depends on.

- **Your cortisol-to-DHEA-S ratio predicts long-term health better than any single hormone** — According to Dinkov, this ratio — spotlighted by the Cureus research — is among the strongest predictors of all-cause mortality and neurodegenerative risk. Even when cortisol fluctuates throughout the day, the ratio reveals whether your stress and repair systems are balanced.

Dinkov suggested measuring cortisol and DHEA-S in hair or nails rather than blood, since these tissues reflect long-term hormonal patterns. For anyone trying to gauge chronic stress or cognitive risk, this offers a simple, objective biomarker that's far more reliable than a one-time blood test.

- **Natural compounds help restore hormonal balance and metabolic strength** — Dinkov referenced several well-known substances — aspirin, niacinamide (vitamin B3), progesterone, pregnenolone, thyroid support, glycine, and emodin — that help correct the same imbalance observed in the Cureus study. These compounds work by lowering excess cortisol, improving mitochondrial energy output, and supporting the production of protective hormones.

Niacinamide, for instance, increases NAD⁺, which fuels cellular repair, while **aspirin** dampens inflammation and cortisol overproduction. Used together, these tools shift your body back into a “rest-and-repair” mode rather than the constant stress chemistry that drives brain aging.

- **DHEA acts as a built-in cortisol regulator** — Dinkov explained one of the key ways DHEA helps keep cortisol in check: it blocks the enzyme that turns inactive cortisol back “on” and boosts the one that clears excess cortisol from your body. This dual action makes DHEA a natural cortisol buffer that prevents the overactivation of stress pathways.

In other words, DHEA gives your brain a biochemical “cooling system,” stopping cortisol from overheating your neurons. Supporting DHEA through thyroid health, nutrition, and targeted supplementation helps restore this essential balance.

- **Stress is a symptom of low energy, not just emotional strain** — Dinkov described how the elevated cortisol levels observed in the Cureus Alzheimer's cohort represent a deeper issue: energy failure. When your cells don't make enough ATP — whether from poor thyroid output, nutrient deficiencies, or aging — they turn to cortisol to compensate.

The hormone breaks down tissue to release fuel, but that process worsens energy depletion over time. This self-reinforcing loop explains why chronic stress feels endless: it's a metabolic, not psychological, trap. Dinkov concluded that maintaining a low cortisol-to-DHEA-S ratio protects more than memory — it sustains whole-body resilience.

People who keep this ratio balanced experience better sleep, stable mood, and slower biological aging. His message is practical: by restoring thyroid function, eating enough to prevent energy deficits, and lowering chronic inflammation, you directly influence the biochemical environment that determines whether your brain decays or endures.

Rebuild Your Energy System to Lower Cortisol and Protect Your Brain

If you wake up tired, crash midafternoon, or feel wired when you should be asleep, your body's stress chemistry has taken over. The Cureus study³ and Dinkov's review⁴ both point to the same conclusion: your brain suffers when your cells can't make enough energy.

To fix that, you have to restore steady fuel, retrain your stress response, and help your body recognize that it's no longer in survival mode. Here's how to bring your hormones — and your energy — back into balance:

- 1. Feed your metabolism the fuel it's been missing** — Cutting carbs keeps your body trapped in a constant stress loop because cortisol spikes whenever blood sugar drops too low. Break that pattern by eating enough healthy carbohydrates — around 250 grams daily — to give your mitochondria a steady energy supply.

Start with gentle foods like fruit and white rice. When your digestion feels stable (no bloating or irregularity), add cooked root vegetables, then more vegetables, legumes, and well-tolerated whole grains. Once your body trusts it's being fed regularly, cortisol naturally declines, and your energy and focus stabilize.

- 2. Move in ways that restore instead of deplete** — Overdoing **endurance exercise** or high-intensity intervals keeps your body in fight-or-flight mode long after the workout ends. Cortisol stays elevated, recovery slows, and sleep suffers.

Replace long, punishing sessions with physical activities that build energy rather than drain it — strength training, walking outdoors, dancing, or swimming at an easy pace. Use how you feel afterward as your guide: if you finish feeling grounded and calm, you've helped your hormones, not hurt them.

- 3. Train your nervous system to shift out of stress** — Your breath is the fastest lever you have to quiet cortisol and activate your parasympathetic, or “rest and digest,” system. Try **rhythmic breathing patterns** like 4-7-8 or 4-8 breathing — inhaling for four seconds, holding briefly, and exhaling slowly for seven to eight seconds.

The extended exhale stimulates your vagus nerve, lowering heart rate and cortisol while signaling safety to every organ. Practice before bed, after meals, or whenever tension rises. Over time, your body learns that it no longer needs to live in emergency mode.

- 4. Rebuild your circadian rhythm through light and sleep** — Cortisol follows your light exposure, not your alarm clock. Get outside within an hour of waking to anchor your body's **circadian rhythm**, and dim screens and overhead lighting at night so melatonin can rise naturally.

Keep your bedtime and wake-up times consistent — even on weekends — to lock in hormonal balance. Deep, regular sleep clears stress hormones, strengthens memory, and repairs brain tissue. If you're dragging through the day, fix your light and sleep first instead of relying on caffeine.

- 5. Use natural progesterone to quiet the cortisol surge** — Bioidentical progesterone acts as your body's built-in cortisol brake, restoring calm where chronic stress has hijacked balance. Unlike synthetic versions, natural progesterone fits perfectly into your body's own receptor system, lowering cortisol's overstimulation and supporting deep rest.

How to Use Progesterone

Before you consider using progesterone, it is important to understand that it is not a magic bullet, and that you get the most benefit by implementing a Bioenergetic diet approach that allows you to effectively burn glucose as your primary fuel without backing up electrons in your mitochondria that reduces your energy production. My new book, "Your Guide to Cellular Health: Unlocking the Science of Longevity and Joy," covers this process in great detail.

Once you have dialed in your diet, an effective strategy that can help counteract estrogen excess is to take transmucosal progesterone (i.e., applied to your gums, not oral or transdermal), which is a natural estrogen antagonist. Progesterone is one of only three hormones I believe many adults can benefit from. (The other two are DHEA and pregnenolone.)

I do not recommend transdermal progesterone, as your skin expresses high levels of 5-alpha reductase enzyme, which causes a significant portion of the progesterone you're taking to be irreversibly converted primarily into allopregnanolone and cannot be converted back into progesterone.

Ideal Way to Administer Progesterone

Please note that when progesterone is used transmucosally on your gums as I advise, the FDA believes that somehow converts it into a drug and prohibits any company from advising that on its label. This is why companies promote their progesterone products as "topical."

However, please understand that it is perfectly legal for any physician to recommend an off-label indication for a drug to their patient. In this case, progesterone is a natural hormone and not a drug and is very safe even in high doses. This is unlike synthetic progesterone called progestins that are used by drug companies, but frequently, and incorrectly, referred.

Dr. Ray Peat has done the seminal work in progesterone and probably was the world's greatest expert on progesterone. He wrote his Ph.D. on estrogen in 1982 and spent most of his professional career documenting the need to counteract the dangers of excess estrogen with low-LA diets and transmucosal progesterone supplementation.

He determined that most solvents do not dissolve progesterone well and discovered that vitamin E is the best solvent to optimally provide progesterone in your tissue. Vitamin E also protects you against damage from LA. You just need to be very careful about which vitamin E you use as most supplemental vitamin E on the market is worse than worthless and will cause you harm not benefit.

It is imperative to avoid using any synthetic vitamin E (alpha tocopherol acetate – the acetate indicates that it's synthetic). Natural vitamin E will be labeled "d alpha tocopherol." This is the pure D isomer, which is what your body can use.

There are also other vitamin E isomers, and you want the complete spectrum of tocopherols and tocotrienols, specifically the beta, gamma, and delta types, in the effective D isomer. As an example of an ideal vitamin E, you can look at the label on our vitamin E in our store. You can use any brand that has a similar label.

You can purchase pharmaceutical grade bioidentical progesterone as Progesterone Powder, Bioidentical Micronized Powder, 10 grams for about \$40 on many online stores like Amazon. That is nearly a year's supply, depending on the dose you choose.

However, you will need to purchase some small stainless steel measuring spoons as you will need a 1/64 tsp, which is 25 mg and a 1/32 tsp, which is 50 mg. A normal dose is typically 25 to 50 mg and is taken 30 to 60 minutes before bed, as it has an anti-cortisol function and will increase GABA levels for a good night's sleep.

If you are a menstruating woman, you should take the progesterone during the luteal phase or the last half of your cycle, which can be determined by starting 10 days after the first day of your period and stopping the progesterone when your period starts.

If you are a male or non-menstruating woman, you can take the progesterone every day for four to six months and then cycle off for one week. The best time of day to take progesterone is 30 to 60 minutes before bed as it has an anti-cortisol function and will increase GABA levels for a good night's sleep.

This is what I have been personally doing for over a year with very good results. I am a physician so do not have any problems doing this. If you aren't a physician, you should consult one before using this therapy, as transmucosal progesterone therapy requires a doctor's prescription.

FAQs About Cortisol and Alzheimer's Disease

Q: What did the new Alzheimer's study reveal about cortisol and DHEA-S?

A: Researchers found that people with Alzheimer's disease had cortisol levels roughly 20% higher than healthy adults, while their DHEA-S levels stayed about the same. This created a skewed cortisol-to-DHEA-S ratio — meaning stress hormones were overpowering the brain's natural defenses. That imbalance, not just genetics or amyloid buildup, appears to drive the early stages of brain decline.

Q: How are DHEA and DHEA-S different?

A: DHEA is the fast-acting form of the hormone, while DHEA-S is the stable, long-lasting form stored in your blood. Because DHEA-S changes slowly, it's a better measure of long-term stress and brain resilience. It also acts as a neurosteroid, helping neurons resist inflammation and oxidative damage while buffering cortisol's harmful effects.

Q: What did Georgi Dinkov's analysis add to this research?

A: Dinkov explained that the Cureus study confirms a broader principle: high cortisol and low metabolic energy often go hand in hand. He connected these hormone shifts to thyroid sluggishness, nutrient depletion, and aging — all of which drain cellular energy and raise stress chemistry. He also noted that maintaining a low cortisol-to-DHEA-S ratio predicts not just better memory but longer life and greater overall resilience.

Q: What practical steps help lower cortisol and restore hormonal balance?

A: To calm your stress system, start by fueling your metabolism. Eat enough healthy carbohydrates — about 250 grams per day — to keep blood sugar stable. Cut back on overtraining, use rhythmic breathing to activate your vagus nerve, and rebuild your circadian rhythm by getting morning sunlight and sleeping on a consistent schedule. These changes lower cortisol naturally while improving energy and mental clarity.

Q: How does progesterone fit into this picture?

A: Natural progesterone acts as a built-in cortisol blocker. Your body recognizes it as a calming, balancing hormone that reduces overstimulation, helps you sleep deeply, and stabilizes mood. Natural progesterone effectively blocks cortisol by reducing blood concentrations, helping restore hormonal harmony, protecting your brain and body from the long-term effects of stress.

Sources and References

- ^{1, 3} [Cureus October 13, 2025; 17\(10\)](#)
- ^{2, 4} [To Extract Knowledge from Matter October 16, 2025](#)