

Vitamin B6 Supports Ovarian Function and May Influence Menopause Transition

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STORY AT-A-GLANCE

- › Ovarian function depends on more than fertility, influencing hormone rhythms that shape metabolism, mood, sleep, and energy, while gradually becoming less efficient as reproductive aging progresses
- › A study in the *Journal of Ovarian Research* found vitamin B6 helped awaken dormant eggs in the ovary, encouraging them to begin the early growth process needed for future egg development
- › Menopause is increasingly viewed through a metabolic lens, with evidence that egg cells maintain mitochondrial stability longer than expected, and ovarian activity may resume under certain experimental conditions
- › Vitamin B6 may influence menopause-related pathways by supporting ovarian energy, stress hormone balance, and early egg activity
- › Beyond vitamin B6, other practical strategies to support ovarian health include maintaining adequate carbohydrates for mitochondrial energy, supporting thyroid function, and ensuring sufficient vitamins A and E

The ovaries do far more than release eggs. They help maintain a finely tuned hormonal rhythm that shapes mood, metabolism, sleep quality, energy levels, and long-term health. Month after month, even outside of fertility, they regulate signals that influence

how the body feels and functions. But like all systems, ovarian function naturally becomes less efficient, reflecting a gradual shift in the biological systems that support hormonal balance.¹

Nutrition has long been known to play a role in reproductive health, but some nutrients appear to carry more weight than others. Vitamin B6, best known for its role in brain chemistry and metabolic pathways, is now emerging as one of those key nutrients with deeper implications for ovarian vitality. Researchers are beginning to uncover just how essential it may be for supporting reproductive function across the female lifespan.²

Vitamin B6 as a Regulator of Ovarian Function

A study published in the Journal of Ovarian Research explored whether vitamin B6 could influence one of the most fundamental processes in ovarian biology – the activation of primordial follicles. Primordial follicles represent the ovary's resting egg reserve, remaining dormant for years until a small fraction gradually enters growth and moves toward ovulation.³

- **Researchers identified vitamin B6 as a direct trigger of primordial follicle activation** – When newborn mouse ovaries were exposed to a range of vitamins, several increased the number of follicles entering growth. Vitamin B6 stood out because it produced a clear dose-dependent rise in the number of growing follicles. This suggested that B6 was doing more than supporting general tissue health, since it appeared to push follicles out of their resting state and into active development.
- **Vitamin B6 increased early egg cell development signals alongside follicle growth** – The researchers found that B6 raised expression of key egg-cell maturation genes, including Gdf9 and Zp3. These markers guide early oocyte (immature egg cell) development within the follicle, and their increase alongside follicle activation strengthened the case that B6 was engaging the biological machinery of growth.

- **Granulosa cell proliferation rose, supporting structural follicle expansion** – For a follicle to leave dormancy, it also needs support cells around the egg to begin multiplying. These are called granulosa cells, and they act almost like a nurturing layer that expands as the follicle grows. Vitamin B6 significantly increased the proportion of these cells. This indicates not only follicular activation but also improved support from the ovarian microenvironment.
- **B6 activated the PI3K/Akt pathway, a central growth switch inside the oocyte** – Much of the study focused on the PI3K/Akt pathway, a central growth switch inside the oocyte that helps determine whether a follicle remains dormant or begins to develop. Vitamin B6 significantly increased activity in this pathway, including signals that release follicles from their resting state and allow early growth to proceed.
- **Human ovarian tissue showed that vitamin B6 increased follicle activation** – Researchers cultured ovarian cortical fragments from women undergoing laparoscopic surgery and found that vitamin B6 increased the proportion of growing follicles from roughly 22% to over 33%. Protein testing also confirmed higher p-Akt levels, indicating activation-related signaling within human ovarian tissue.
- **Oxidative stress and mitochondrial effects remain an open question** – The paper noted that primordial follicles typically maintain very low reactive oxygen species (ROS), since excess mitochondrial strain can damage oocytes and trigger follicle loss.

Vitamin B6 has demonstrated ROS-lowering effects in other contexts, but this study did not show direct changes in apoptosis markers tied to oxidative damage. Its antioxidant role in ovarian activation, therefore, remains an area for further investigation.

- **Dietary vitamin B6 intake was linked to hormone shifts in premenopausal women** – These experimental results are further supported by a study published in the *Journal of the Academy of Nutrition and Dietetics*, which examined the association

between dietary B6 intake and hormone levels in premenopausal women.

This research found that higher vitamin B6 intake correlated with changes in follicle-stimulating hormone (FSH), a key hormone involved in ovarian signaling and aging. While not focused on follicle activation directly, the study supports the idea that B6 plays an ongoing role in modulating the reproductive axis.

Together, the findings from animal models, human tissue, and dietary data point to vitamin B6 as an essential factor in the maintenance of ovarian health across multiple levels.

Menopause as a Metabolic Transition, Not Just Ovarian Shutdown

Menopause is clinically defined as the permanent cessation of menstruation for 12 consecutive months, most often occurring between ages 45 and 55. It marks the end of the reproductive window and is commonly associated with irregular cycles, hot flashes, night sweats, vaginal dryness, mood changes, and fatigue. Conventional medicine has often treated it as an inevitable biological endpoint rather than a process shaped by deeper physiology.⁴

- **Menopause is typically framed as irreversible egg depletion, but this view may be incomplete** – The central assumption has been that menopause occurs because the ovaries simply "run out" of viable eggs and permanently shut down. This interpretation presents the transition as a structural decline.

However, emerging evidence shifts the emphasis toward the metabolic systems that sustain ovarian function, especially the energy demands required for hormone production and follicle development.

- **Human egg cells show unexpected mitochondrial stability well into the reproductive years** – A study published in Science Advances analyzed single oocytes from women aged 20 to 42 and compared mitochondrial DNA mutations

across tissues.⁵

While blood and saliva showed the expected age-related accumulation of mitochondrial mutations, oocytes did not, maintaining similar levels of mitochondrial genetic stability even into the early 40s. This suggests that egg cells may preserve mitochondrial integrity longer than previously assumed.

- **Premature ovarian insufficiency has shown signs of reversibility under experimental conditions** – Women diagnosed with premature ovarian insufficiency, often labeled irreversible, have undergone interventions that restored menstruation and, in some cases, led to pregnancy. These reports suggest ovarian activity may sometimes resume when underlying physiological conditions are addressed.^{6,7}
- **This has been echoed in Ray Peat's bioenergetic view of menopause** – Peat proposed that menopause resembles a hormonal slowdown comparable to male andropause, shaped by systemic metabolic conditions rather than structural collapse of the ovaries themselves. Within this framework, ovarian aging becomes closely tied to energy availability, stress physiology, and hormone regulation.⁸
- **Vitamin B6 has been discussed as a metabolic lever influencing menopause-related pathways** – Bioenergetic researcher Georgi Dinkov connected findings from the Journal of Ovarian Research on vitamin B6 to menopause physiology through its reported effects on stress and hormone signaling.

"Vitamin B6 has anti-estrogenic/anti-prolactin, pro-dopamine, and anti-cortisol effects. The combination of these effects suggest that vitamin B6 may be 'non-steroidal hormone,' and a possible treatment for female infertility whether triggered by menopause, stress, diet or of iatrogenic origin," Dinkov wrote in his blog.

"... A decline in the number of active primordial follicles is well-known feature of menopause, which suggests that vitamin B6 therapy may be a viable option for either delaying or preventing menopause, or reversing

already established menopause, with the last currently thought by mainstream medicine to not be possible.”⁹

This shift reframes menopause less as a simple endpoint and more as a state shaped by mitochondrial energy, hormonal signaling, and systemic metabolic tone. This interpretation opens new avenues for supporting midlife vitality through strategies that restore energetic and endocrine balance, including targeted nutritional approaches such as vitamin B6.

Beyond B6 – Other Strategies That May Help Reverse Menopause

Considering the growing evidence that ovarian function may be revived through metabolic support, researchers and clinicians are now exploring additional approaches aimed at restoring ovarian hormone production and follicle activity by addressing the underlying metabolic dysfunction. These include:

- **Intraovarian platelet-rich plasma (PRP) therapy** – This approach uses a person's own blood, processed to concentrate platelets, which are then injected directly into the ovaries.

Published case reports have described the return of menstrual cycles in some postmenopausal women, along with improvements in hormonal markers such as estrogen and anti-Müllerian hormone (AMH). In a few instances, pregnancies have been reported afterward, either naturally or with IVF.¹⁰

- **Stem cell therapy** – Research has also explored stem cell therapy in women diagnosed with premature ovarian insufficiency (POI). Early findings, largely from preclinical studies, suggest that mesenchymal stem cells may support ovarian tissue by helping follicles survive and continue developing, improving hormone output, and reducing inflammatory stress within the ovary.

These cells appear to work mainly through the chemical signals they release, which can influence repair processes and immune balance in the surrounding tissue.¹¹

- **Metabolic therapies** – These strategies have been explored for their ability to influence ovarian function through cellular energy pathways. In particular, Peat was among the first to propose that nutrients such as vitamins A and E, along with hormones like bioidentical progesterone and dehydroepiandrosterone (DHEA), may support ovarian activity by strengthening the energy systems that drive hormone synthesis.¹²

In this view, these compounds influence reproduction at the level of cellular metabolism, supporting steroid hormone production, follicle maturation, and the physiological conditions needed for regular ovulation.

For a deeper look at the research exploring ovarian reactivation and metabolic approaches to menopause, read "[Can Menopause Be Reversed?](#)"

Strategies to Support Ovarian Function and Manage Menopause Symptoms

If ovarian aging is closely tied to cellular energy availability, then strategies that support mitochondrial metabolism become increasingly relevant for easing menopause symptoms and maintaining hormonal function. Here's where to start:

- 1. Increase vitamin B6 intake** – Vitamin B6 is widely available through nutrient-dense foods, and consistent dietary intake is the most practical way to maintain healthy levels. The richest sources include grass fed beef liver, poultry, wild-caught fish, and eggs. Chickpeas, potatoes, and bananas contain this nutrient as well.¹³
- 2. Strengthen the metabolic foundations** – Thyroid health, adequate carbohydrate intake, and mitochondrial nutrients form the baseline for ovarian energy production. Thyroid hormones regulate metabolic rate and mitochondrial output, and low levels

are commonly reported in perimenopausal and postmenopausal women, which are linked to reduced cellular energy availability.

Supporting thyroid function with enough bioavailable protein, carbohydrates, and minerals such as magnesium and selenium helps maintain the metabolic capacity needed for hormone production.

- 3. Focus on healthy carbohydrates** – Carbohydrates serve as one of the most efficient fuels for mitochondrial energy production, and most adults function best with at least 250 grams per day.

When carb intake is too low, the body relies more heavily on fat oxidation as a fallback energy pathway, which is associated with greater metabolic strain rather than improved efficiency. Peat emphasized for decades that supporting ovarian function depends on maintaining strong glucose metabolism rather than prolonged energy restriction.

- 4. Ensure sufficient vitamins A and E** – Vitamin A plays an essential role in steroid hormone production, follicular development, and thyroid receptor sensitivity. Many women may fall into a state of subclinical deficiency, particularly when foods such as liver, eggs, and dairy are avoided. When vitamin A intake is brought back to adequate levels, hormone production may improve.¹⁴

Vitamin E has also been studied for its protective effects in ovarian tissue, particularly against oxidative stress, which contributes to mitochondrial strain over time. Research suggests it supports mitochondrial respiration, reduces follicular cell death, and improves markers associated with ovarian reserve.

It also helps defend against lipid peroxidation in polyunsaturated fat-rich environments, a common exposure in modern diets due to the widespread use of seed oils.^{15,16}

5. Consider bioidentical progesterone (not synthetic progestins) – Progesterone plays a central role in menstrual cycle regulation and is also linked to brain and bone support, as well as modulation of the stress response. It has been associated with improved mitochondrial respiration and more efficient thyroid hormone conversion, placing it upstream in the metabolic systems that shape reproductive hormone output.

For women experiencing signs often associated with estrogen dominance, such as heavy bleeding, breast tenderness, anxiety, or insomnia, practitioner-guided use of bioidentical progesterone is one strategy for restoring hormonal stability and supporting ovulatory signaling.

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.

Frequently Asked Questions (FAQs) About Vitamin B6 and Ovarian Function

Q: What are primordial follicles, and why do they matter?

A: Primordial follicles are the ovary's resting reserve of immature follicles. They remain dormant until signals trigger them to begin developing. Because menopause is associated with a decline in active follicles over time, anything that affects this earliest stage of follicle activity becomes biologically significant.

Q: What role does vitamin B6 play in ovarian health?

A: Vitamin B6 helps activate resting follicles, supports early egg development, and improves the cellular environment inside the ovaries. It also promotes the growth of support cells called granulosa cells, boosts mitochondrial energy output, and reduces the kind of stress that can damage egg cells. These effects may help preserve ovarian function.

Q: Is menopause always irreversible once it begins?

A: Menopause is clinically defined as 12 consecutive months without menstruation, but research has documented rare cases where ovarian activity resumed under experimental conditions. These findings suggest that ovarian function may respond to metabolic interventions.

Q: Can vitamin B6 really delay or reverse menopause?

A: Emerging evidence suggests it might. Vitamin B6 has been shown to activate primordial follicles and influence hormone signaling pathways tied to reproductive aging. Some researchers believe menopause reflects a loss of ovarian energy, not just egg depletion, and B6 supports the systems that keep the ovaries active.

Q: Where should I start if I want to support ovarian health during midlife?

A: The most reliable foundation comes from consistent nutrient-dense eating, adequate carbohydrate intake to support mitochondrial energy, thyroid and mineral support, and supplementing with bioidentical progesterone. These strategies focus on restoring metabolic stability rather than chasing symptoms alone.

Sources and References

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