

References

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Hormone Balance & Protect

Protects and Helps Maintain Balance, Bioavailability and Safety of Naturally Produced Hormones as well as Hormonal Therapies

Hormone Balance & Protect is a nutritional and herbal formula critical to supporting healthy and safe metabolism of endogenous hormones as well as hormonal therapies. Optimal endocrine function requires both sufficient hormone production and availability, as well as highly functioning hormone receptors. Widespread exposure to endocrine disrupting compounds (EDCs) interferes with many hormone-dependent processes in what should be a closely controlled communications system, partly by competing at hormone and nuclear receptors, and mimicking or suppressing endogenous hormone activity.¹ This formula provides key nutrients and botanicals to help stabilize hormone levels and enhance their binding, restoring balance to hormonal signaling pathways.

Hormone Balance & Protect formulator, Dr. Devaki Lindsey Berkson, has worked as a hormone scholar at a Tulane University estrogen think-tank (Center for Bioenvironmental Research) with scientists who discovered the first two estrogen receptors, Estrogen Receptor Alpha (ERα) and Estrogen Receptor Beta (ERβ). Her focus on receptor function and not just hormone levels is partly a result of many lectures delivered over years of E.Hormone conferences, which highlighted the role of receptor functionality in keeping hormone signals intact, and the role of receptor function in disease prevention.

Clinical Relevance

Exposure to EDCs has become nearly universal, with many of their detrimental consequences mediated via hormonal interference. Although EDCs have diverse mechanisms of toxicity, they are known to interfere with the synthesis, action, and metabolism of sex steroid hormones, including direct interference at the steroid hormone receptor, such as the estrogen and androgen receptors.² Phthalates, for example, interrupt testosterone synthesis in Leydig cells and may also modulate conversion



to the more potent androgen dihydrotestosterone.³ Dioxins and certain organochlorine pesticides induce the activity of cytochrome P450 enzymes which metabolize estrogen more rapidly, decreasing the amount of estrogen available for binding.⁴

Hormone Balance & Protect Benefits:

- Protects and helps maintain balance, bioavailability and safety of naturally produced hormones as well as prescribed hormonal therapies.
- Promotes hormone balance by enhancing bioavailability of hormone action on diverse cells.
- Supports overall balanced and hormonal health including receptor functionality, optimal duration of signaling time and nutrient support for transcriptional co-factors to get critical hormone signals into cell's genes.



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Highlights

Para-Aminobenzoic Acid

Para-aminobenzoic acid (PABA) is an intermediary in the bacterial synthesis of folic acid. PABA likely potentiates the action of both glucocorticoids and estrogens. In the early 1950's when cortisone was very expensive, it was discovered that adding PABA to cortisone slowed the breakdown of cortisone in the liver, allowing the patient to get more benefit with less medication and cost.^{5,6,7,8}

As a hormone potentiator, PABA was discovered to potentiate the action of glucocorticoids and estrogens. It does so by slowing down the metabolism of these hormones, and many other sex steroid hormones such as androgens, increasing their half-lives. The patient gets a more "level" hormone experience.^{9,10} By slowing down the metabolism of the hormones in the liver and uterus, the hormones can act longer.^{11,12}

In an uncontrolled trial, administration of 100 mg of PABA 4 times a day per day for 3 to 7 months to 16 women who had been infertile for at least 5 years resulted in pregnancy in 12 cases (75%).¹³

PABA also supports a balanced and healthy immune system by boosting the natural production of interferon.¹⁴ It may also have an anti-clotting effect, inhibiting thrombin induced thromboxane B2 in human platelets, suggesting a potential benefit when taken with estrogen.^{15,16} PABA is a natural and effective anti-inflammatory agent, a powerful antioxidant and a lipid peroxidase inhibitor, even in the eyes.^{7,9,17,18,19}

PABA appears to have antifibrotic actions. As humans age, fibrosis can drive adverse modeling of tissues in the heart, kidneys and brain. As a result, PABA promotes healthier aging of heart, brain and renal tissues. It also appears to increase the use of oxygen especially by the skin.^{20,21}

PABA works as a thyroid protector and appears to decrease TPO antibody levels to some extent, although additional research is needed. But it is not contraindicated in autoimmune thyroiditis.²²

Vitamin A

Retinol and other vitamin A derivatives are ligands for many nuclear receptors, such as retinoic acid receptor-retinoid X receptors, influencing expression of a variety of genes, with virtually every organ dependent on vitamin A availability.²³ Vitamin A is also an unappreciated co-factor for 3 beta-dehydrogenase, also critical for steroidogenesis. Deficiencies

of this vitamin may result in impaired enzyme activity and impaired activity of estrogen, as well as other sex steroid hormones. For example, among women with menorrhagia and hypovitaminosis A, estradiol levels normalized (as did menstrual flow) in more than 92% of patients.^{24,25,26,27,28,29}

Boron

Boron helps improve the bioavailability of estrogen, testosterone and vitamin D.³⁰ Boron helps release estrogen and testosterone from their binding protein SHBG, increasing the free levels of these steroids, and the bioavailability of hormones or hormone therapies.^{31,32} Additionally, many heavy metals work act as hormone receptor antagonists, but boron protects against heavy metal and EDC toxicity.

Benefits of Boron³³:

- Supports growth and maintenance of bone
- Helps with wound healing
- Beneficially impacts the body's use of estrogen, testosterone, and vitamin D
- Boosts magnesium absorption
- Balances levels of inflammatory biomarkers, such as high-sensitivity C-reactive protein (hs-CRP) and tumor necrosis factor alpha (TNF-alpha)
- Raises levels of antioxidant enzymes, such as superoxide dismutase (SOD), catalase, and glutathione peroxidase
- Protects against pesticide-induced oxidative stress and heavy-metal toxicity
- Supports the brain's electrical activity, cognitive performance, and short-term memory for elders
- Influences the formation and activity of key biomolecules, such as S-adenosyl methionine (SAM-e) and nicotinamide adenine dinucleotide (NAD(+))
- Promotes healthy parathyroid action³⁴
- Promotes healthy action of estrogen on the basic cells of the heart³⁴

Grape Seed Extract

Grape seed extract is a natural aromatase inhibitor, suppressing aromatase gene expression as well as aromatase activity. Grape seed extract (GSE) contains high levels of procyanidin dimers shown to be potent inhibitors of aromatase, and it also favorably

modulates the ERβ gene.^{35,36} Animal studies suggest it may also block the action of bisphenol A, at least partly through an antioxidant effect.³⁷

Vitamin B6

Vitamin B6 modulates steroid receptor-mediated gene expression, either increasing or decreasing gene expression depending upon the availability of vitamin B6 within the cell.³⁸ Along with other B vitamins, higher intake has been associated with more favorable risk for conditions related to estrogen activity, at least in part by its role in one-carbon metabolism.³⁹ Perhaps by modulating cortisol activity, supplementation has been associated with reduced pre-menstrual anxiety as well as anxiety among older women.⁴⁰

Zinc

In addition to its role zinc-finger proteins, which play a key role in hormone receptor binding, zinc has been shown to be crucial to the reproductive system of both men and women. While in men it has clearly been shown to be essential to spermatogenesis, maintenance of testosterone levels and sexual development, in women a zinc deficiency has been linked to multiple pathologies, including decreased FSH and LH synthesis, and other hormonal imbalances.^{41,42}

Milk Thistle

Primarily recognized for its hepatoprotective and antioxidant properties, milk thistle contains flavonoids, which limit excessive cellular reproduction through multiple mechanisms in both *in vitro* and *in vivo* models, including modulation of the ERα receptor and suppression of TGF-β2 production.^{43,44,45,46} Recently, milk thistle has also been found to selectively bind the ERβ receptor, providing additional protection to estrogen sensitive tissues.^{47,48}

Broccoli Seed Extract

Cruciferous vegetables have long been recognized to have favorable benefits on estrogen metabolism, shifting detoxification pathways toward less toxic metabolites, and disruption of ERα transcription.^{49,50} Glucosinolates have also been shown to induce expression of the antioxidant enzyme NAD(P)H:quinone oxidoreductase (NQO1), which provides additional protection against environmental toxicants.^{51,52}

How to Use

Recommendation: Two capsules two times per day with food as a dietary supplement.

Cautions

While most individuals can easily tolerate PABA, it should be avoided during pregnancy, lactation, with severe sulfa hypersensitivities, or while taking sulfa medications.



Hormone Balance & Protect are available in 120 capsule bottles (#8130).

Supplement Facts		
Serving Size: 2 Capsules		
Servings Per Container: 60		
	Amount Per Serving	% Daily Value
Vitamin A (retinyl acetate)	450 mcg RAE (1,500 IU)	50%
Vitamin C (as ascorbic acid)	125 mg	139%
Niacin (as niacin)	10 mg	63%
Vitamin B6 (as pyridoxine HCl)	5 mg	294%
Vitamin B5 (as calcium pantothenate)	100 mg	2,000%
Iodine (as potassium iodide)	25 mcg	17%
Magnesium (as magnesium glycinate)	10 mg	2%
Zinc (as zinc citrate)	5 mg	45%
PABA (para-aminobenzoic acid)	150 mg	*
Broccoli (seed) extract (10% Glucoraphanin)	100 mg	*
Grape Seed Extract (95% OPC's)	70 mg	*
Boron (as calcium borogluconate)	1.5 mg	*
Proprietary Blend	335 mg	*
Ginseng (Panax ginseng) (root)*, Citrus bioflavonoids*, Stinging Nettle (Urtica dioica) (root) (extract)*, Milk thistle (Silybum maritimum) (root & aerial part) (extract)*		
*Daily Value not established		

Other Ingredients: Capsule shell (gelatin and water) and magnesium stearate (vegetable source).

This product is gluten and dairy free.

*These statements have not been evaluated by the Food and Drug Administration. These products are not intended to diagnose, treat, cure, or prevent any disease.