

Support for Healthy Estrogen Metabolism

Developed and reviewed by the clinical, chiropractic, and naturopathic members of the Standard Process team

Estrogen Physiology and Metabolism

Estrogen is necessary for proper brain and immune function, glucose metabolism, bone turnover, and cardiovascular health. Estradiol, estrone, and estriol are the three main forms of estrogen within the body, and each has a unique biochemical structure, potency, and binding affinity to estrogen receptors.

The liver is the primary site of estrogen biotransformation, where cytochrome P450 enzymes break down estrogens into metabolites in Phase I of liver detoxification. Common estrogen metabolites include 2-hydroxyestrone (2-OH), which is the least estrogenic and most protective of the metabolites. Conversely, 16-hydroxyestrone (16-OH) is strongly estrogenic and can contribute to increased cellular proliferation and inflammation. While some level of all metabolites is expected with the breakdown of estrogen, generally the therapeutic aim is to favor the 2-OH pathway.

In Phase II, estrogen metabolites undergo methylation and conjugation to be eliminated from the body through the bile, stool, and urine in Phase III. The gut microbiome also plays a key role in metabolizing estrogen. Certain gut bacteria secrete the enzyme beta-glucuronidase, which can break down estrogen and facilitate its reabsorption. If not properly metabolized and eliminated, reabsorbed estrogens can drive circulating levels higher and lead to conditions of excess estrogen such as fibroids, endometriosis, PMS, heavy menstrual bleeding, weight gain, and breast cysts.

Nutrition and lifestyle practices support proper estrogen metabolism by optimizing detoxification pathways and liver health and supporting digestive processes and a healthy gut microbiome.

Supportive Lifestyle Practices

- Encourage a regular exercise regimen to support a beneficial shift in estrogen metabolism. Moderate to vigorous exercise of 150 minutes weekly has been shown to increase the favorable 2-OH metabolite while causing a decline in the more unfavorable 16-OH metabolite.¹
- Teach patients about the potential danger of storing food and beverages in plastic containers which may contain chemicals that contribute to harmful estrogenic activity in the body. Exposure to heat, sunlight, microwave radiation, boiling, and dishwashing has been shown to increase the release of these estrogenic compounds.² Consider using alternate materials like glass, stainless steel, and ceramic.

Whole Foods Nutritional Recommendations

- Encourage patients to ingest 25-35 grams of fiber daily, including a mix of insoluble, soluble, and prebiotic fibers. Whole food sources include fruits and vegetables, whole grains, nuts, seeds, and legumes. Fiber supports the healthy microbial metabolism of estrogen and increases estrogen elimination through the stool.³
- Probiotic-rich foods like yogurt, kimchi, and kefir support a healthy gut microbiome that can properly regulate estrogen metabolism.⁴
- Recommend daily consumption of cruciferous vegetables such as kale, Brussels sprouts, broccoli, cauliflower and cabbage. Crucifers contain glucobrassicin, which is converted to indole-3-carbinol (I3C) and diindolylmethane (DIM). These compounds support the 2-OH metabolism pathway.⁵
- Encourage the consumption of ground flaxseed, which is a good source of lignan, a plant estrogen that weakly binds to estrogen receptors and modulates the biological activity of other estrogens.⁶

Dietary Supplement Regimen



Cruciferous Complete™

Suggested Use: **1 capsule per day**

Cruciferous Complete is a supplement containing cruciferous vegetables that supports healthy liver function in the elimination of free radicals.*

- Supports healthy liver function*
- Provides ingredients with antioxidant activity
- Contains kale and Brussels sprouts, which have compounds that have been shown in our preclinical research to promote the liver’s detoxification pathway*



LivCo®

Suggested Use: **1 capsule 3-4 times daily**

LivCo® provides herbs for liver health and contains Schisandra, Rosemary and Milk Thistle to provide liver cleansing support.*

These herbs have been traditionally used in herbal preparations to:

- Aid in the elimination of naturally occurring toxins and support healthy general detoxification*
- Support healthy liver function*
- Support and maintain cellular health*



SP Complete®

Suggested Use: **Two rounded tablespoons (scoops) per shake. One to three shakes per day.**

SP Complete offers essential whole-food nutrition & protein with all essential amino acids in a convenient powder to support your body during a cleanse & beyond.*

- Supports intestinal and immune system health*
- Supports the maintenance of a healthy weight when combined with a healthy lifestyle*
- Adds vital nutrients to any diet and it can be used as nutritional support in the Standard Process Purification Program*
- Excellent source of protein
- Good source of dietary fiber, choline, and calcium



ProSynbiotic

Suggested Use: **3 capsules per day**

ProSynbiotic, a probiotic for everyday microbial support, is a synergistic blend of 4 probiotic microbes and a prebiotic fiber to support overall intestinal health.*

- Contains inulin which is used by probiotic bacteria as food
- Supports a healthy gut microbial environment*
- Supports normal bowel regularity*

Assessment of Estrogen Metabolism

- Lab studies: liver function tests, estradiol, estrone, free and total testosterone, DHEA-S, progesterone
- Specialty testing: estrogen metabolism markers, urinary estrogen metabolites, Standard Process Microbiome Test Kit

In Office/Physical Exam

- Signs/Symptoms such as weight gain, fibroids, fibrocystic breast changes, heavy menstrual bleeding, PMS, headaches, mood changes
- Personal or family history of estrogen-dependent cancers (ovarian, uterine, breast)
- Consider ultrasound of the uterus

REFERENCES

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4. Basnet, J., et al (2024). Gastrointest Disord, 6(4), 801-815.

5. Rajoria S, et al (2011) Thyroid, Mar;21(3):299-304.

6. Brooks, J. D., et al (2004). The American journal of clinical nutrition, 79(2), 318–325.

