

Estrogen Metabolism

Estrogens constitute a group of hormones, including Estrone (E1), Estradiol (E2), and Estrinol (E3). Additionally, there are alternate estrogen forms commonly known as "estrogen metabolites," primarily undergoing metabolism in the liver before being eliminated from the body through the digestive and urinary systems.

Estrogen metabolism refers to the intricate processes involving the creation, utilization, and elimination of estrogens through diverse pathways in the body. Numerous factors influence estrogen metabolism, encompassing aspects such as nutrition, stress, toxin exposure, genetics, and various health conditions (e.g., metabolic syndrome, anorexia nervosa, hypothyroidism, autoimmunity). When estrogen metabolism becomes imbalanced, the proper breakdown and elimination of estrogens are compromised. Such disruptions in estrogen metabolism may result in DNA damage and, in certain instances, predispose individuals to cancer. Specific estrogen metabolites have been linked to an elevated risk of cancers, including those affecting the breast, ovaries, and prostate.

The accumulation of excessive estrogen in the body can lead to a condition known as "Estrogen Dominance." This condition may exacerbate conditions such as endometriosis, premenstrual syndrome (PMS), polycystic ovarian syndrome (PCOS), and premenstrual dysphoric disorder (PMDD). Moreover, Estrogen Dominance increases the susceptibility of both women and men to certain cancers. The diagram and summary below outline factors that can either promote or disrupt estrogen metabolism.

ENCOURAGE BALANCED ESTROGEN METABOLISM:

Fiber: Dietary fiber binds to harmful estrogen metabolites and other toxins in the digestive tract, facilitating their elimination from the body. Numerous studies indicate a reduced risk of breast cancer with higher dietary fiber intake, emphasizing a recommended daily goal of at least 25 grams. Coupled with adequate hydration and other measures for healthy elimination, fiber helps prevent the reabsorption and recirculation of estrogen metabolites in the body.

Cruciferous vegetables: Part of the broccoli family or brassica vegetables, exhibit positive effects on estrogen metabolism and overall cancer risk reduction. This vegetable family, supported by numerous studies, contains sulforaphane—an essential phytonutrient. Sulforaphane promotes glutathione production, a key antioxidant, and up-regulates the Nrf2 detoxification pathway. For more information, consult your healthcare practitioner about IFM's Food Sources of Cruciferous Vegetables resource.

Antioxidants: Found abundantly in IFM's Phytonutrient Spectrum, play a crucial role in cancer risk reduction, including breast cancer. Colorful fruits and vegetables, green tea, dark chocolate, herbs, and spices are rich in antioxidants, neutralizing cancer-inducing free radicals

and supporting detoxification pathways. Incorporating a diverse range of antioxidant-rich foods into your daily diet is recommended.

Omega-3: Fats from sources like fish, fish oil, and flax contribute to reducing inflammation levels in the body, indirectly supporting healthy estrogen metabolism. Opt for omega-3-rich choices such as wild-caught salmon, sardines, herring, mackerel, and anchovies, while avoiding farm-raised fish due to potential disruptions in estrogen metabolism caused by PCBs and other chemicals.

Supplements: Certain supplements may offer support for individuals experiencing symptoms related to estrogen metabolism disruptions. Diindolylmethane (DIM) and Indole-3-carbinol (I3C), extracted from cruciferous vegetables, are commonly recommended. Additionally, melatonin, N-acetyl-cysteine, and methylated B vitamins show potential in supporting healthy estrogen metabolism. Always seek personalized supplement recommendations from your functional medicine provider, considering individual physiology and health goals.

INTERRUPTIONS FOR OPTIMAL ESTROGEN METABOLISM

Xenoestrogens: Refer to chemicals that imitate estrogen within the body. Numerous personal care and household products incorporate substances capable of interfering with optimal estrogen metabolism. For additional guidance on selecting body and home care items, you can explore the Environmental Working Group website at ewg.org. Consult your healthcare practitioner for insights from IFM's resources on minimizing toxin exposure.

Genetics: Various genetic variants associated with detoxification, such as COMT, CYP1A1, CYP1B1, and GST, can influence estrogen metabolism. Scientific studies indicate that dietary and lifestyle adjustments may offer support for individuals with specific genetic variations. If you're interested in understanding how genetics might affect your hormonal and overall health, engage in discussions with your functional medicine provider or a genetic counselor.

Alcohol: Alcohol undergoes metabolism in the liver, a process shared with estrogen. Elevated alcohol consumption levels have the potential to disrupt estrogen metabolism, thereby increasing the risk of breast and overall cancer. It is essential to consider individual risk factors, with a general recommendation for men to limit intake to 1 to 2 servings per day, and women to consume just 1 serving of alcohol no more than four times a week.

