

Estrogen

Cysteine

Prevents oxidation of estrogen into a dangerous form that causes breast cancer.^{29,30,31}

Choline

Estrogen stimulates the breakdown of phosphatidylcholine (cell membrane) so those with low estrogen (postmenopausal women) require more choline; Detoxifies excess estrogen via methylation pathway.^{1,32,33}

Folate

Deficiency reduces estrogen levels; Excess folate is linked to some types of estrogen-related breast cancer; Detoxifies excess estrogen via methylation pathway; Regulates estrogen's effect on genes.^{1,2,3}

Zinc

Estrogen lowers risk of zinc deficiency; Zinc dependent proteins metabolize estrogen.^{26,27,28}

Vitamin B6

Protects genes from estrogen-induced damage thus lowering risk of hormone related cancers; Detoxifies excess estrogen via methylation pathway; Estrogen-based oral contraceptives cause B6 deficiency.^{4,5,6,7}

Magnesium

Cofactor for the enzyme that removes toxic forms of estrogen (catechol-O-methyltransferase); Estrogen alters magnesium levels throughout menstrual cycle.^{1,24,25,26}

Vitamin D

Regulates synthesis of estradiol and estrone; Enhances estrogen's protective effect on bones.^{8,9,10}

Selenium

Estrogen levels affect how selenium is distributed to various tissues in the body.^{22,23}

Vitamin C

Increases the most potent estrogen (estradiol) in women on hormone therapy; Lowers aromatase (enzyme that converts testosterone to estrogen) in ovaries.^{11,12,13}

Calcium

Calcium-D-glucarate lowers estradiol levels; Helps breakdown estrogen in the liver and convert it to a less toxic form.^{1,20,21}

Vitamin K

Inhibits estrogen activity by binding to estrogen receptors; Lowers the ratio of estradiol (strong estrogen) to estrone (weaker estrogen).^{14,15}

Vitamin A

Helps metabolize the biologically active estrogen (estradiol) to an inactive form (estrone).^{18,19}

Vitamin E

Deficiency impairs estrogen detoxification pathway; Some forms of vitamin E inhibit estrogen action, especially in breast tissue; Low levels linked to higher estrogen.^{1,16,17}

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