

Estro-Defense

- Supports Estrogen Balance
- Supports Proper Estrogen Metabolism for Women and Men
- Improves Estrogen Detoxification Pathways and Hormone Excretion
- Provides Cellular Antioxidant Support for DNA Stability

This product is a targeted supplement that combines the synergistic benefits of the cruciferous vegetable metabolites Indole-3-carbinol (I3C) and diindolylmethane (DIM) to support proper estrogen metabolism. Formulating I3C and DIM together creates the ideal combination of beneficial metabolites to support estrogen balance and breast and prostate health.

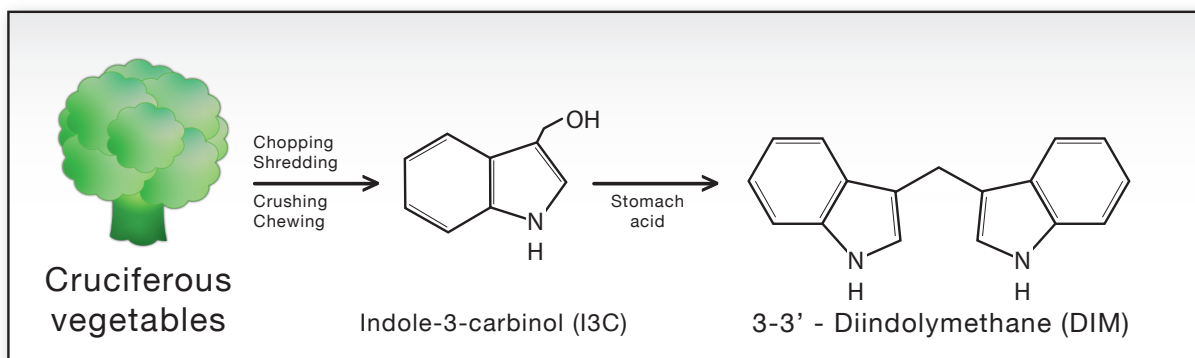
The Health Benefits of Cruciferous Vegetable Metabolites[†]

Many of the health benefits derived from eating cruciferous vegetables (cabbage, brussels sprouts, broccoli, etc.), especially those that may be beneficial for breast and prostate health, are thought to be derived from the group of secondary metabolites known as glucosinolates. When these vegetables are cut, crushed or chewed the enzyme myrosinase (released from the cells) hydrolyses these glucosinolates into other compounds. For instance, glucosinolates from broccoli and brussel sprouts readily convert into I3C when consumed. I3C can then be further converted via stomach acid into

other health promoting compounds, including DIM. These compounds are generally thought to be responsible for the various cellular activities that lead to hormone health.

Overview

Estrogen collectively refers to the female hormones estradiol, estrone and estriol. Hormones have important functions in every area of the body. They are chemical messengers that interact with cells all over the body (especially tissues that are more sensitive to them, including breast and prostate tissues). The most important message they deliver to cells is to grow, divide and multiply. For this reason, hormones are critically important in human development and tissue repair. Supporting proper estrogen synthesis, metabolism and detoxification is essential for proper hormonal balance. The means in which estrogen is metabolized can result in different metabolites, each with individual biological activity. By keeping hormones in balance and ensuring the body is able to process hormones properly, cruciferous vegetable metabolites (such as I3C and DIM) work together to reduce hormone overload and maintain



cellular health. Current data on I3C and DIM suggests that these phytonutrients have strong potential for supporting breast, cervical, uterine and prostate health.¹⁻⁴ Together, I3C and DIM promote the creation of the favorable and protective 2-hydroxyestrone (2-OHE) metabolite versus production of 4-hydroxyestrone (4-OHE) and 16-alpha-hydroxyestrone (16-alphaOHE), metabolites which can overstimulate cells and create free radicals that cause DNA damage.⁵ The influence of I3C and DIM on estrogen metabolism creates a more desirable ratio of 2-OHE to 16-alpha-OHE. This assessment of 2:16-alpha-OHE ratio has been used to evaluate breast health. With this in mind, this product includes targeted doses of both I3C and DIM in one capsule per day dosing to make daily balancing of hormones easy and convenient.

I3C†

I3C (indole-3-carbinol) is a naturally occurring compound found in numerous cruciferous vegetables, such as broccoli, cauliflower, kale and cabbage. Following ingestion of I3C, the body converts it to several different metabolites, one of which is diindolylmethane (DIM). Both of these compounds, as well as many other I3C metabolites, have been shown to impact metabolic shifts and cellular activities for improved health outcomes. I3C has also been shown to temper estrogen signals by competing for binding sites and inhibiting the activity of estrogen receptors.⁶⁻¹⁵ A study published in the Journal of Nutrition unveiled evidence that I3C supports healthy cellular function related to estrogen metabolism.¹⁶

DIM†

Diindolylmethane (DIM) is a phytonutrient and plant indole also found in cruciferous vegetables with potential for enhancing proliferation of healthy cells and cellular activities. As a dimer (formed chemical structure of two substances) of indole-3-carbinol, DIM promotes beneficial estrogen metabolism in both sexes supporting the formation of healthy estrogen metabolites and enhancing the potential for greater antioxidant activity.¹⁷⁻¹⁹

Calcium D-Glucarate †

Calcium D-Glucarate is the supplemental calcium salt form of D-glucaric acid, a substance produced naturally in the body and obtained through consumption of certain fruits and vegetables. Calcium D-glucarate has been extensively studied and has been shown to inhibit beta-glucuronidase, an enzyme found in certain bacteria that reside in the gut. This activity supports the body's ability to detoxify estrogens, foreign molecules and fat-soluble toxins.²⁰⁻²³

Directions

2 capsules per day or as recommended by your health care professional.

Does Not Contain

Wheat, gluten, corn, yeast, animal or dairy products, fish, shellfish, peanuts, tree nuts, egg, artificial colors, artificial sweeteners or preservatives.

Cautions

Do not consume this product if you are pregnant or nursing.

Supplement Facts ^{v3}		
Serving Size 2 Capsules		
Servings Per Container 30		
2 capsules contain	Amount Per Serving	% Daily Value
Vitamin E (from 50 IU as d-Alpha Tocopherol Succinate USP)	33.5 mg	223%
Calcium (as Calcium D-Glucarate USP)	120 mg	9%
Calcium D-Glucarate USP	1 g	*
I3C (Indole-3-Carbinol)	200 mg	*
DIM (Diindolylmethane)	100 mg	*
* Daily Value not established		

†These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.

References

1. Yuan F et al. Anti-estrogenic activities of indole-3-carbinol in cervical cells: implication for prevention of cervical cancer. *Anticancer Res.* 1999 May Jun;19(3A):1673-80.
2. Frydoonfar HR, McGrath DR, Spigelman AD. The effect of indole-3-carbinol and sulforaphane on a prostate cancer cell line. *ANZ J Surg.* 2003 Mar;73(3):154-6.
3. Chinni SR, Li Y, Upadhyay S, Koppolu PK, Sarkar FH. Indole-3-carbinol (I3C) induced cell growth inhibition, G1 cell cycle arrest and apoptosis in prostate cancer cells. *Oncogene.* 2001 24;20(23) :29236.
4. Zhang J et al. Indole-3-carbinol induces a G1 cell cycle arrest and inhibits prostate-specific antigen production in human LNCaP prostate carcinoma cells. *Cancer.* 2003 Dec.
5. Miller, K. Estrogen and DNA Damage: The Silent Source of Breast Cancer? *J Natl Cancer Inst* 2003 Volume 95, Issue 2Pp. 100-102.
6. Auburn KJ, Fan S et al. Indole-3-carbinol is a negative regulator of estrogen. *J Nutr.* 2003 Jul;133(7 Suppl):2470S-2475S.
7. McAlindon TE et al. Indole-3-carbinol in women with SLE: effect on estrogen metabolism and disease activity. *Lupus.* 2001;10(11):779-83.
8. Meng Q et al. Indole-3-carbinol is a negative regulator of estrogen receptor-alpha signaling in human tumor cells. *J Nutr.* 2000 Dec;130(12):2927-31.
9. Meng Q, Qi M et al. Suppression of breast cancer invasion and migration by indole-3-carbinol: associated with up-regulation of BRCA1 and E-cadherin/catenin complexes. *J Mol Med.* 2000;78(3):155-65.
10. Lee IJ, Han F, Baek J, Hisatsune A, Kim KC. Inhibition of MUC1 expression by indole-3-carbinol. *Int J Cancer.* 2004 May 10;109(6):810-6.
11. Brandi G et al. A new indole-3-carbinol tetrameric derivative inhibits cyclin-dependent kinase 6 expression, and induces G1 cell cycle arrest in both estrogen-dependent and estrogen-independent breast cancer cell lines. *Cancer Res.* 2003 Jul 15;63(14):4028-36.
12. Wong GY, Bradlow L et al. Dose-ranging study of indole-3-carbinol for breast cancer prevention. *J Cell Biochem Suppl.* 1997;28-29:111-6.
13. Bradlow HL, Michnovicz JJ et al. Long-term responses of women to indole-3-carbinol or a high fiber diet. *Cancer Epidemiol Biomarkers Prev.* 1994 Oct-Nov;3(7):591-5.
14. Chinni SR, Sarkar FH. Akt inactivation is a key event in indole-3-carbinol-induced apoptosis in PC-3 cells. *Clin Cancer Res.* 2002 Apr;8(4):1228-36.
15. Leibelt DA et al. Evaluation of chronic dietary exposure to indole-3-carbinol and absorption-enhanced 3,3'-diindolylmethane in sprague-dawley rats. *Toxicol Sci.* 2003 Jul;74(1):10-21. *Epub* 2003 May 02.
16. Ashok BT Abrogation of estrogen-mediated cellular and biochemical effects by indole-3-carbinol. *Nutr Cancer.* 2001;41(1-2):180-7.
17. Firestone GL, Bjeldanes LF. Indole-3-carbinol and 3,3'-diindolylmethane antiproliferative signaling pathways control cell-cycle gene transcription in human breast cancer cells by regulating promoter-Sp1 transcription factor interactions. *J Nutr.* 2003 Jul;133(7 Suppl):2448S-2455S. 1;98(11):2511-20.
18. Hong C, Firestone GL, Bjeldanes LF. Bcl-2 family-mediated apoptotic effects of 3,3'-diindolylmethane (DIM) in human breast cancer cells. *Biochem Pharmacol.* 2002 Mar 15;63(6):1085-97.
19. Nachshon-Kedmi M, Yannai S, Haj A, Fares FA. Indole-3-carbinol and 3,3'-diindolylmethane induce apoptosis in human prostate cancer cells. *Food Chem Toxicol.* 2003 Jun;41(6):745-52.
20. Hanausek M, Walaszek Z, Slaga TJ. Detoxifying cancer causing agents to prevent cancer. *Integr Cancer Ther.* 2003 Jun;2(2):139-44.
21. Singh J, Gupta KP. Calcium glucarate prevents tumor formation in mouse skin. *Biomed Environ Sci.* 2003 Mar;16(1):9-16.
22. Review. Calcium-D-glucarate. *Altern Med Rev.* 2002 Aug;7(4):336-9.
23. Walaszek Z, Szemraj J et al. Metabolism, uptake, and excretion of a D-glucaric acid salt and its potential use in cancer prevention. *Cancer Detect Prev.* 1997;21(2):178-90.