



Diindolylmethane: DIM, 3,3'-diindolylmethane

Common Indications:

- Estrogen metabolism regulation – supports proper 2-OH conversion, clearance
- Anti-estrogenic support to decrease risk of hormone regulated cancers
- To reduce risk of breast and prostate cancer

General Comments:

Diindolylmethane (DIM) is found in cruciferous vegetables such as broccoli, cauliflower, Brussels sprouts, cabbage and others. It is a plant indole. DIM directly influences how the liver metabolizes estrogen, nudging it down the healthier 2-hydroxy pathway and not the 4-hydroxy path. This results in reduced risk for breast cancer and enhances proper clearance of estrogen excess.

Benefits & Mechanism of Action:

Estrogen metabolism regulation support

Estradiol is a valuable hormone with many beneficial impacts for the body but it goes through a complex array of metabolites that can either promote better health or in the worst case create risk for DNA alteration and cancer. DIM influences this metabolism in a very beneficial way which is why consumption of cruciferous vegetables reduce the occurrence of all types of cancer. DIM blocks the production of the harmful 4-hydroxyestrone that have been reported to be carcinogenic.¹ DIM can play a role in reducing thyroid cancer issues as there is a link between thyroid antibodies, thyroid cancer and estrogen metabolism.²

Anti-estrogenic support to decrease risk of hormone regulated cancers

By regulating proper clearance and metabolism of estradiol, DIM has been shown to be beneficial in reducing estrogen enhanced thyroid cancer proliferation and metastatic events. It influences and reduces risk for cancer invasion, and its tendency toward adhesion and migration.^{3,4,5,6,7} Its ability to act on MMP-2 and MMP-9 metalloproteinases allows it to suppress the AKT and ERK pathways.³

Dose: 75-600mg daily

- Depending upon estrogen levels and general metabolism.

Symptoms of Deficiency: Deficiency studies in humans have not been conducted.

Food Sources: DIM occurs in high concentrations in *Brassica* family vegetables, including broccoli, cauliflower, Brussels sprouts, and cabbage.

Cautions & Side Effects:

Caution should be use if taking the following medications with DIM:

Medications that decrease stomach acid such as antacids, cimetidine (Tagamet), famotidine (Pepcid), ranitidine (Zantac) or PPIs may cause DIM to not be metabolized appropriately.

References:

Estrogen metabolism regulation support

1. Dalessandri KM, Firestone GL, Fitch MD, et al. Pilot study: effect of 3,3'-diindolylmethane supplements on urinary hormone metabolites in postmenopausal women with a history of early-stage breast cancer. *Journal of Nutrition and Cancer*. 2004;50(2):161-7.
2. Rajora S, Suriano R, George A, et al. Estrogen induced metastatic modulators MMP-2 and MMP-9 are targets of 3,3'-diindolylmethane in thyroid cancer. 2011. *PLoS One*. 2011;6(1):e15879.

Antiestrogenic support to decrease risk of hormone regulated cancers

3. Rajora S, Suriano R, Wilson YL, et al. 3,3'-diindolylmethane inhibits migration and invasion of human cancer cells through combined suppression of ERK and AKT pathways. *Oncol Rep*. 2011;25(2):491-7.
4. Bell MC, Crowley-Norwick P, Bradlow HL, et al. Placebo-Controlled Trial of Indole-3-Carbinol in the Treatment of CIN. *Gynecol Oncol*. 2000;;78(2):123-129.
5. Garikapaty VP, Ashok BT, Tadi K, et al. 3,3'-diindolylmethane downregulates pro-survival pathway hormone independent prostate cancer. *Biochem Biophys Res Commun*. 2006;340(2):718-25.
6. Wang Z, Yu W, et al. Induction of growth arrest and apoptosis in human breast cancer cells by 3,3- diindolylmethane is associated with induction and nuclear localization of p27kip. *Mol Cancer Ther*. 2008 Feb;7(2):341-9.
7. Wang TT, et al. Estrogen receptor alpha as a target for indole-3-carbinol. *J Nutr Biochem*. 2006 Oct;17(10):659-64.