

DIM--(Di-Indoly Methane)

For Natural Protection from Estrogen's Effects

What do perimenopause, premenstrual syndrome, enlarged prostate glands, and early heart attacks have in common? *Estrogen*. A new understanding of healthy estrogen metabolism is providing a natural treatment for these and other important conditions confronting both women and men.

Fortunately, phytonutrients discovered in cruciferous vegetables offer a natural approach to resolving estrogen imbalance. Dietary supplementation with an absorbable form of one of these phytonutrients, called Di-Indoly Methane (DIM), *helps promote healthier estrogen metabolism*. DIM's hormonal balancing effects have revealed these midlife problems are not due to estrogen itself alone, but rather, to estrogen metabolism imbalances.

What is DIM, and how can it help hormones?

DIM is a phytonutrient (plant nutrient) found in cruciferous vegetables. These include cabbage, broccoli, bok choy, Brussels sprouts, cauliflower, kale, kohlrabi, mustard, rutabaga, and turnip. These plants have been cultivated for thousands of years and were initially used for their medicinal benefits.

The connection between DIM and hormones like estrogen has to do with similar characteristics between them at the molecular level. DIM is not an estrogen or a hormone, but like estrogen it shares the common characteristic of being poorly soluble in water. Like estrogen, DIM can be metabolized only by a special class of cytochrome enzymes that reside in cell membranes in the non-water part of cells. It turns out that DIM, when consumed in food or in absorbable formulations, encourages its own metabolism. This special metabolic pathway for DIM, and the enzymes involved, precisely overlaps with the pathway needed for healthy estrogen metabolism.

Stated simply, supplementing the diet with DIM specifically promotes beneficial estrogen metabolism and helps restore a healthy hormonal balance.

What is estrogen dominance?

Middle-aged men and women experience changes in hormone production and metabolism resulting in excess estrogen action. There are three basic forms of this common imbalance known as estrogen dominance.

Perimenopause

In women, slower hormone metabolism in midlife can mean higher-than-normal levels of estrogen and a deficiency in its healthy metabolites. Faltering estrogen metabolism often occurs in women during perimenopause, the years before menopause, and is characterized by higher monthly estrogen levels prior to estrogen's dramatic fall at menopause. Additionally, progesterone levels fall during perimenopause, resulting in a rising estrogen-to-progesterone ratio.

Middle-aged men

Rising estrogen also becomes a problem for men during their 50s and 60s. In overweight men, testosterone is increasingly converted into estrogen by aromatase and rising estrogen also competes with falling testosterone. This corresponds to a time during which estrogen accumulates in the prostate gland. Estrogen is believed to contribute to benign prostatic hypertrophy (BPH).

Acquired estrogen imbalance

This important form of estrogen dominance has to do with inherited problems in estrogen metabolism and influences of diet and chemicals on beneficial metabolite production. Acquired estrogen imbalance affects both men and women.

Almost 20 years ago, H. Leon Bradlow, Ph.D., a renowned breast cancer investigator, discovered women with breast and uterine cancer made too little of the 2-hydroxy or ‘good’ metabolite of estrogen and too much of the 16-hydroxy or ‘bad’ variety.

Since 16-hydroxy is unregulated forms of estrogen prone to behave like ‘super-estrogen,’ higher levels create a particularly unhealthy form of estrogen dominance. 16-hydroxy estrogens can result in mutations, abnormal growth (as in cervical dysplasia), and an increased risk of future breast cancer. Overproduction of 16-hydroxy estrogen is also seen in obesity, high-fat diets, and exposure to a host of ‘estrogenic’ environmental chemicals. Therefore, this dangerous form of estrogen dominance can result from inheritance, diet, and environmental chemicals.

What benefits can DIM offer?

Supplementing our diets with DIM can shift the production of estrogen metabolites away from dangerous 16-hydroxy in favor of beneficial 2-hydroxy metabolites. *Taking DIM in an absorbable formulation encourages active and healthy estrogen metabolism.* DIM supports estrogen balance by increasing beneficial 2-hydroxy estrogens and reducing the unwanted 16-hydroxy variety. This improves estrogen metabolism and helps resolve all three forms of estrogen dominance.

Note: Remember, 2-hydroxy is good; 16-hydroxy is bad.

Why not just eat more cruciferous vegetables?

Recent reports, like one from the Fred Hutchison Cancer Center in Seattle, Washington indicate a *higher intake of cruciferous vegetables is associated with a lower risk of prostate cancer.*

This study indicates cruciferous vegetables are protective for hormone-sensitive cancers. However, direct measurements of upward, beneficial shifts in estrogen metabolism indicate you would have to eat at least two pounds per day of raw or lightly cooked cruciferous vegetables to derive

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the same benefit as two capsules of specially formulated DIM. Benefits for cervical dysplasia, PMS, BPH, and other conditions have not been seen with the use of broccoli, cabbage juice, or dried powders or extracts from vegetables.

Absorbable DIM formulations overcome the need for active enzymes within the vegetable and chemical reactions in your stomach to produce DIM. For similar reasons, absorbable DIM provides many advantages over indole-3carbinol (I3C), another cruciferous phytochemical available as a supplement. I3C is an unstable precursor that requires activation in the stomach to be converted into DIM. This means I3C must be taken at a much higher dose and can undergo unpredictable and undesirable chemical reactions in your stomach and colon. DIM, in a delivery system to assure absorption, is by far preferable to the supplemental use of I3C.

How much DIM is recommended?

To replace the DIM from healthy amounts of cruciferous vegetables in the diet, women should take a starting dose of about 15 mg per day of actual DIM in an absorbable formulation. Men should take about 30 mg per day of actual DIM in the same absorbable or bioavailable formulation. These amounts can be increased three to four times on an individual basis to derive needed benefits for hormonal balance and metabolism. Based on testing in men, improved estrogen metabolism, easier weight loss, and prostate health require a higher dose of DIM than in women.

Since pure DIM must be provided in an absorption-enhancing formulation, the dose for DIM sometimes specifies the weight of the absorbable formulation, which is only one-fourth, or 25 percent DIM. In the book, *All about DIM*, the suggested dose of 100 to 200 mg per day for women and 200 to 400 mg of DIM per day for men refers to milligrams of such an absorbable formulation. This dose range for hormonal balance corresponds to 25 to 50 mg per day of actual DIM for women and 50 to 100 mg of actual DIM for men.

What's exciting about the effect of DIM on premenstrual syndrome (PMS)?

PMS symptoms of irritability, aggression, tension, depression, mood swings, water retention, and breast pain or swelling are frequently seen in perimenopausal women. While a reduction in PMS severity has been seen with nutritional therapy, full resolution has been elusive. These interventions have included lower-fat diets, and supplementation with minerals, Vitamin D, and herbal extracts.

PMS symptom improvement has been noted after beginning dietary supplementation with absorbable DIM. These results suggest DIM is able to correct the estrogen imbalance in PMS. It is well documented that estradiol, the primary active form of estrogen, is elevated in PMS. Also it has been shown the degree of estradiol elevation correlates with symptom severity.

Also encouraging is the observation that the enzyme pathways promoted by DIM help metabolize pregnenolone sulfate. Pregnenolone sulfate is a brain hormone important for memory, but which causes anxiety if levels are too high. Like estrogen, pregnenolone sulfate is elevated in PMS. Its healthy metabolism produces beneficial, immune stimulating metabolites and may help relieve anxiety. Absorbable DIM supplementation *promotes healthier metabolism of both estrogen and pregnenolone in PMS.*

What is the best supplementation approach to PMS?

A strong nutritional approach to PMS includes bio-available DIM, Vitamin D, calcium, and magnesium. Synergistic interaction of these ingredients benefits PMS. An example of this synergy is the ability of beneficial 2-hydroxy estrogens to increase progesterone production, potentiating this effect. This new nutritional approach to PMS helps with mineral and hormonal balance. *DIM works to resolve the dominance of estrogen over progesterone.*

How can helping estrogen metabolism benefit men?

Everyone knows estrogen is an important hormone for reproduction in women. What is not often appreciated is that estrogen levels, though lower than those in women, are also essential in men. However, midlife changes in men result in excess estrogen production beyond its minimal essential level.

Like perimenopausal women, men experience a tendency to gain weight in midlife. Rising estrogen production can result, since fat cells contain the aromatase enzyme that converts testosterone into estrogen. Unmetabolized estrogen creates a vicious cycle resulting in further estrogen production. This occurs because fat is one source of more active aromatase enzymes, causing further estrogen production and continuing weight gain. An open label study of DIM in overweight men and women showed it *promoted more efficient weight loss and more active fat metabolism.*

In this regard, DIM is similar to green tea extract and spices like cayenne pepper. Di-indolyl methane may have a role in helping to intervene with excess estrogen production associated with *obesity and male aging.* Besides weight gain, another aspect of early aging in men is prostate gland enlargement.

It has been clearly established that estrogen accumulates in aging prostate glands at the same time enlargement occurs. This process is linked to difficulty with urination and frequent urination at night. The role of estrogen is still being established in this process, but research using estrogen binding substances shows lowering estrogen levels improves the symptoms of nighttime urination. Use of absorbable DIM by men with these same symptoms has proven beneficial.

Can DIM help improve the safety of hormone replacement therapy (HRT)?

Despite a growing list of benefits attributed to estrogen, which include younger-looking skin, more comfortable sex, and better memory,
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women often view its potential side effects as unacceptable. Study of postmenopausal women receiving long-term HRT with estrogen and estrogen/progesterone combinations has revealed an unequivocal increase in breast cancer risk.

Note: These studies were done with Premarin, horse estrogens, and synthetic progestins, NOT progesterone.

Added concerns relate to the increase in the incidence of uterine cancer, and increased risk of life-threatening blood clots, especially after bone fracture. Most recently, the nationwide HERS study reported the troublesome finding that women with a history of heart disease had an increased risk of heart attack in the first year after starting estrogen.

Many of estrogen's risks can be related to a lack of its beneficial metabolites. It is now known that a lower risk of future breast cancer is associated with higher 2-hydroxy estrogen levels.

Supplementation with bioavailable DIM increases protective 2-hydroxy estrogen and therefore may reduce the risk of HRT-related cancer. Reduction in the risk of abnormal blood clot formation related to HRT estrogen would benefit women who suffer fractures while on HRT, but also may benefit women with early heart disease.

It has been known since the Framingham Study in Massachusetts that men with the highest estradiol level had the highest risk of early heart attack. DIM may help normalize the cardiac risk in both men and women related to unhealthy or under active estrogen metabolism. Also, the beneficial 2-hydroxy metabolites have been shown to be powerful antioxidants, which may contribute to protecting against the early stages of atherosclerosis and subsequent heart attacks.

Conclusion

DIM supplementation is a nutritional approach to achieving a safer and healthier estrogen metabolism, or of protecting it. Many of the benefits

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traditionally ascribed to estrogen (protection from heart disease, healthy skin, bones, and brain) may actually reside with its beneficial metabolites, the 2-hydroxy estrogens. DIM supplementation is a natural promoter of this specific pathway of healthy estrogen metabolism.