

The Doctor's RESEARCH UPDATE

Natural Medicine for Women's and Men's Health

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Dr. Zeligs earned a Masters degree in stress-physiology from the University of California, Santa Barbara, completed a fellowship in Molecular Immunology, and received his M.D. from the University of California, Irvine, College of Medicine. Dr. Zeligs is a leading authority on diindolylmethane (DIM). He was awarded a patent for his microencapsulated formulation of absorbable DIM and has numerous issued and pending patents for novel uses of DIM in preventive medicine. As a physician-investigator, he has sponsored clinical trials for HPV, cervical dysplasia, uterine and prostate health. These clinical trials are underway in collaboration with Cornell University, the NYU School of Medicine, Cancer Research UK, Wayne State University, and New York Medical College. The National Cancer Institute, under a clinical trials agreement with Dr. Zeligs, has sponsored additional clinical trials investigating microencapsulated DIM as a natural preventive and therapeutic candidate for cancer.

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Diindolylmethane (DIM) for Healthy Aging

Phytonutrient support for hormone metabolism and healthy weight loss

Aging and Inflammation

As we age, many cells in our bodies become chronically inflamed, resulting in an increased risk of weight gain, diabetes, and cancer. By aiding healthy hormone metabolism and helping the body recognize and eliminate stressed cells, we can reduce generalized inflammation and slow the progress of aging-related disorders.

DIM (diindolylmethane) is a natural antioxidant and phytonutrient found in cruciferous vegetables that research has shown to have powerful anti-inflammatory activity. DIM is an indole that is highly insoluble. In order to be absorbed well, pure DIM must be microencapsulated. Microencapsulation has, in fact, been proven to significantly increase the gastrointestinal absorption of DIM (1). When absorbed, DIM directs estrogen metabolism to produce healthy and cancer-protective 2-hydroxy estrogens (2) and minimizes the activity of pro-inflammatory enzymes (3), thereby reducing cellular inflammation. Activating these pathways encourages remarkable weight loss and hormonal balance and provides many other benefits in the way of healthy aging.

Absorbable DIM Helps Maintain Healthy Cells by Resolving Inflammation

The epidemic of "metabolic syndrome" is characterized by abdominal obesity, rising cholesterol, and pre-diabetes. Evidence shows that low levels of generalized inflammation and cellular stress are linked to insulin resistance and weight gain, which creates an avenue for metabolic syndrome to develop. This cycle has been attributed to high-glycemic processed starches and sugars, trans fats, and lack of exercise, but new research shows that exposure to environmental pollutants can also cause inflammation (4). New population studies show that blood levels of organo-chlorine pesticides and polychlorinated biphenyls (PCBs) are significantly associated with elevated fasting glucose and greater waist circumferences in U.S. adults who are otherwise considered healthy (5). Dietary exposure to a range of environmental chemicals, including plastics, pesticides, tobacco, hydrocarbons, and petrochemicals, can contribute to chronic inflammation and therefore contribute to aging-related disorders such as weight gain, diabetes, and cancer. Supplemental cruciferous indoles have been shown to increase the metabolism and elimination of tobacco related toxins.

Microencapsulated DIM may benefit the safe metabolism and elimination of other hydrocarbon pollutants as well.

Microencapsulated DIM has been shown specifically to control the activity of inflammatory receptors and mediators as well as support the antioxidant enzymes within cells. Recent research shows that even at low doses, DIM suppresses the inflammatory response from certain white blood cells called macrophages (3).

Macrophages are present in tissue and are derived from precursor monocyte white cells in blood. They accumulate in fat deposits, particularly intra-abdominal fat, and other sites of inflammation. Known as the conductors of the immune response, macrophages produce and secrete an array of pro-inflammatory hormones and cytokines, which may contribute to the metabolic syndrome (6). In the recent research, DIM was shown to specifically inhibit the production and release of inflammation-promoting cytokines from macrophages.

DIM Specifically Benefits Estrogen Metabolism

Estrogen is an essential pro-growth hormone present in women and men. Due to its potent capability to deliver messages on a cellular level, poorly metabolized estrogen has the potential to contribute to metabolic syndrome. Estrogen is metabolized into several different post-estrogen hormones, namely 2-hydroxy, 4-hydroxy and 16-hydroxy estrogens. Research has shown 4-hydroxy and 16-hydroxy estrogens to be powerful growth and inflammation promoters, with

direct connections to cancer, especially in estrogen-sensitive tissues such as the uterus, cervix, and prostate (7). Obesity is also associated with these unfavorable estrogen metabolites (8).

2-hydroxy estrogens, on the other hand, have been shown to be powerfully protective of those same tissues, helping prevent cancer and resolve disorders including uterine fibroids and elevated PSA from prostate tissue (9).

Research shows that absorbable DIM specifically directs metabolism to produce much higher levels of the 2-hydroxy "good estrogens" (10).

Encouraging this favorable hormone metabolism produces remarkable results in the body and invigorates the process of weight loss as well. The 2-hydroxy "good estrogens" help maintain healthy levels of the catecholamine hormones (epinephrine and nor-epinephrine), which specifically stimulate enzymes in fat cells to release stored fat for energy, a process known as lipolysis (11). When given over a period of months in animal studies, 2-hydroxy estrogen prevented obesity and the metabolic syndrome (12).

Research with absorbable DIM has shown that supplementation before exercise results in greater lipolysis in the hours following exercise. This effect was associated with enhanced weight loss in adults on a weight loss program (13).

Use of microencapsulated DIM supplements by thousands of women and men has demonstrated benefits for painful breasts (14), improvement in painful

menstruation (15), improvement in uterine and cervical health (16), and improvement in prostate health. Prostate health is the subject of two current clinical trials supported by the National Cancer Institute in which a reduction of PSA levels in men is anticipated. Effectively balancing hormone metabolism is essential for better health and avoidance of metabolic syndrome. It is advised and easy to test your body's 2/16 estrogen metabolite ratio in order to see whether you are in need of further hormone balance. A ratio of less than 2.0 indicates the need for support for estrogen metabolism.

DIM Synergizes with a Healthy Lifestyle to Increase Well-Being

DIM is compatible with other nutritional interventions to aid successful aging. Absorbable DIM added to a diet further enriched with other natural indoles may offer additional help for weight loss, through better appetite control and a more acute sense of satiety, or fullness. This is possible by increasing cruciferous vegetable intake as a dietary means of supporting levels of the essential amino acid tryptophan. Adding broccoli sprouts and lightly cooked cruciferous vegetables to meals on a regular basis provides sulforaphane and brassinins which are complementary phytonutrient relatives of DIM (17). Together, DIM and these phytonutrients inhibit unwanted breakdown of tryptophan by inhibiting inflammation-related enzymes (18). Adding these other phytonutrients to supplemental DIM may help maintain

tryptophan levels.

Healthy tryptophan levels are central to well-being and help maintain production of the brain chemical serotonin. Serotonin is necessary for better mood and appetite control.

To maintain healthy levels of tryptophan, include tryptophan-rich foods in your diet. These include spirulina, soy nuts, cottage cheese, turkey and tofu. Individuals who are fighting serious carbohydrate cravings and mood disorders should consider adding 5-HTP supplements, taken with absorbable DIM. This

combination provides more predictable and consistent support of brain serotonin, resulting in better mood and more successful appetite control (18).

Ageing Intervention with DIM

Microencapsulated DIM has been the subject of scientific research for more than 10 years, and more than 20 metric tons of this patented formulation of DIM have been safely consumed by humans. Absorbable DIM provides unique capabilities to reduce generalized inflammation and

improve hormone metabolism, both of which have been directly measured in research studies. Reducing inflammation and normalizing estrogen metabolism may be further connected to a reduced risk of obesity and cancer, as well as providing remarkable support for mood, weight loss, and other hormonal imbalances. Supplementing with DIM is a natural and effective approach to healthy aging.

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