



While progress has been made in cancer treatment, breast cancer remains a particular challenge as the most common cancer in the world. Let's talk about a small population who are at greater risk of breast cancer.

About one in 400 humans, or 0.25% of the population, carry mutated BRCA1 or BRCA2 genes. The name "BRCA" is an abbreviation for "BREast CAncer gene." BRCA1 and BRCA2 are two different genes that have been found to impact a person's chances of developing breast cancer. Every human has both the BRCA1 and BRCA2 genes. But despite what their names might suggest, BRCA genes do not cause breast cancer. In fact, these genes normally play a big role in preventing breast cancer. They help repair DNA breaks that can lead to [cancer](#) and the uncontrolled growth of [tumors](#). Because of this, the BRCA genes are known as tumor suppressor genes.

Unfortunately, in some people these tumor suppressor genes do not function properly. When a gene becomes altered or broken, it is called a gene mutation. When a BRCA gene is mutated, it may no longer be effective at repairing broken DNA and helping to prevent breast cancer. Thus people with a BRCA gene mutation are more likely to not only develop breast cancer but also to develop cancer at a younger age. Women that carry the breast cancer gene (BRCA) mutation have an increased risk of breast cancer, and there is no consensus regarding a safe and effective chemoprevention strategy. [Chemoprevention](#) is the use of drugs, vitamins, or other agents to try to reduce the risk of, or delay the development or recurrence of cancer.

A compound found in cruciferous vegetables, 3,3-diindolylmethane (DIM), has been shown to potentially prevent carcinogenesis and tumor growth. Estrogen metabolism plays a role in breast cancer, and [DIM supplementation](#) has been shown to improve estrogen metabolism.

The first study to examine the impact of [DIM supplementation](#) on the amount of fibroglandular tissue (FGT) and background parenchymal enhancement (BPE) on breast magnetic resonance imaging (MRI) in BRCA carriers has just been published in

[Carcinogenesis](#). Researchers investigated the effect of DIM supplementation on breast density (a predictive factor in breast cancer risk) in healthy BRCA carriers. This prospective, single-arm study included 23 healthy females who carry the BRCA mutation. Eighteen women had the BRAC1 mutation and five women had the BRAC2 mutation. Seventy-eight percent of the women were postmenopausal with an average age of 47 years. Each participant consumed 100 mg of DIM once daily for 1 year. Assessments included the amount of FGT and BPE on MRI at baseline and at the end of the study. In addition, urinary estrogen metabolism and a serum hormone profile included follicle-stimulating hormone (FSH), luteinizing hormone, estradiol, progesterone, prolactin, testosterone, sex hormone binding globulin, and thyroid stimulating hormone (TSH) were all measured at baseline and at the end of the study. MRI scans of the matched untreated women attending the clinic were evaluated for the same primary endpoints. The results were scored using the Breast Imaging and Reporting Data System (BI-RADS).

As a result, supplementation with DIM for 1 year showed a decrease in the average score for the amount of fibroglandular tissue. There were no significant changes in BPE. In addition, mean estradiol and testosterone levels decreased. Matched untreated women attending the clinic did not show any significant changes in FGT or BPE.

This study demonstrated that supplementation with DIM for 1 year in BRCA carriers was associated with a significant decrease in the amount of fibroglandular tissue on MRI and a decrease in the average BI-RADS score. Obviously, further studies are warranted; but these findings show promise about nutrition's positive impact on our health. Other nutrients to consider include [delta and gamma tocotrienols](#), [fish oil](#), [curcumin](#), and [resveratrol](#). In my practice I have found [DIM](#) to be economical as well as easy to fit in one's supplement regime.

Source: Yerushalmi R, Bargil S, Ber Y, et al. 3,3-Diindolylmethane (DIM): a nutritional intervention and its impact on breast density in healthy BRCA carriers. A prospective clinical trial [published online ahead of print May 27, 2020]. Carcinogenesis. doi.org/10.1093/carcin/bgaa050.



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