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Phytonutrients in broccoli and soy found to prevent spread of breast cancer, ovarian cancer

by David Gutierrez

(NewsTarget) Naturally occurring chemicals found in broccoli and soy may prevent the spread of breast cancer, according to a study conducted by researchers at the University of California, Los Angeles (UCLA) and presented at the annual meeting of the American Association for Cancer Research.

"We think these compounds might slow or prevent the metastasis of breast and ovarian cancer, which would greatly increase the effectiveness of current treatments," said Erin Hsu, a graduate student in molecular toxicology at UCLA.

Researchers applied 3,3-Diindolylmethane (DIM), found in [broccoli](#), and genistein, found in soy, to motile [cancer cells](#) and observed their effects. They found that the spread of [cancer](#) and the invasion of healthy cells was significantly reduced by the compounds.

This effect occurred because of DIM and genistein's effect on the CXCR4/CXCL12 axis. CXCL12 is a compound produced by healthy cells which binds to CXCR4 receptors on cancer cells, thereby attracting the malignant cells to healthy organs. DIM and genistein were found to reduce the production of CXCR4 and CXCL12 messenger RNAs and proteins in a manner directly proportional to the dose.

As a result, the movement toward CXCL12 was reduced 80 percent in cancer cells treated with either of the plant compounds, compared with untreated cells.

The researchers found the same effect when DIM or genistein were applied to prostate cancer or melanoma cells.

"We have also tested other [phytochemicals](#) and seen similar effects, indicating that this mechanism may mediate protective effects of other vegetable products as well," said Hsu.

Previous studies have indicated the cancer-preventive benefits of broccoli and soy, but this is one of the first to uncover part of the mechanism of that protection.

Researchers said that more toxicological studies are needed before DIM and genistein are used as cancer treatments. For example, it is known that in high doses, genistein can cause infertility in rats.

The DIM and genistein doses used in the UCLA study were probably higher than could be achieved through diet alone, the researchers said, meaning that nutritional supplementation would be required to achieve these medicinal effects.