

# Animal study shows why long-time consumption of soyfoods reduces breast cancer recurrence

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Women diagnosed with breast cancer are often told not to eat soyfoods or soy-based supplements because they can interfere with anti-estrogen treatment. But new research being presented at the American Association for Cancer Research (AACR) Annual Meeting 2015 could eventually impact that advice, because in animals, a long history of eating soyfoods boosts the immune response against breast tumors, reducing cancer recurrence.

The study, conducted at Georgetown Lombardi Comprehensive Cancer Center, could offer good news to some women whose diet has long contained soy.

"I am concerned that some patients may start taking soy supplements when they shouldn't and that others will stop eating soyfoods when they could really benefit from them," says the study's lead investigator, Leena Hilakivi-Clarke, PhD, professor of oncology at Georgetown Lombardi.

The notion that soy, specifically genistein (an isoflavone), can stimulate the growth of [breast cancer cells](#) and disrupt anti-estrogen treatment has been based on studies in mice that do not have [immune](#) cells known as cytotoxic T cells, known to attack breast cancer. This led oncologists to advise their [breast cancer patients](#) not to eat soyfoods.

In a previous study, Hilakivi-Clarke and her doctoral student Xiyuan

Zhang, the lead author of the current study, confirmed that rats that consumed genistein throughout their lifetimes responded better to anti-estrogen treatment than did control rats. They also had reduced risk of cancer recurrence. Genistein, found in soybeans, fava beans and soymilk, among other soy foods, have many biological effects that can reduce cancer risk. However, genistein also activates human estrogen receptors, mimicking estrogen, which can make existing cancer cells grow.

In this study, the researchers investigated if their previous findings could be explained by changes in tumor immune responses. While T cells can attack tumor cells, other [immune cells](#) can disable the ability of these T cells to recognize that tumors are present, allowing breast cancer to grow unchecked by the immune system.

Hilakivi-Clarke and Zhang found that in rats fed genistein since before puberty, the T cell [immune response](#) was activated already before they started treatment with tamoxifen (an anti-estrogen therapy). Also, during the treatment, the tumor's attempt to hide from an immune system attack was thwarted.

"Our results suggest that genistein's ability to activate anti-tumor immune responses and reduce expression of immunosuppressive mechanisms may explain why lifetime genistein intake reduces risk of [breast cancer recurrence](#)," Hilakivi-Clarke says.

"But it is critical that genistein is consumed well before a tumor develops to program the tumor to exhibit good immune responses," Zhang adds.

The findings mirror observational studies that found women who have long been consuming more than 10 mg isoflavones daily are at reduced risk of breast [cancer recurrence](#), compared with women who consume less than 4 mg isoflavones daily. "One cup of soymilk has about 30 mg

isoflavones, the majority of which is genistein," Hilakivi-Clarke says.

"This and our earlier work suggests it is okay to continue consuming soyfoods during [breast cancer](#) treatment. Whether this is because of our finding related to the immune, we can't say conclusively," Hilakivi-Clarke concludes.

Provided by Georgetown University Medical Center

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