

Soy and Breast Cancer

G. Douglas Andersen, DC, DACBSP, CCN

Epidemiological studies have noted an inverse relationship between dietary soy and breast cancer.¹⁻³ However, *in vitro* and animal studies on selected isoflavones have found that they stimulated cell division and tumor growth rates.⁴⁻⁵ Cell studies have also shown positive⁶⁻⁷ and **negative⁸ effects between soy isoflavones and tamoxifen**, a drug used to treat and prevent estrogen receptor-positive (ER+) breast cancer. Tamoxifen works by binding on estrogen receptors of breast cancer cells. With the receptors occupied, estrogen cannot bind on an ER + cancer cell membrane. This prevents the hormone from stimulating growth and proliferation of the cancer.

Scientists have thought soy protein and its phytochemical constituents work the same way. Therefore, when some experiments showed that isoflavones may be *enhancing* cellular replication, it caused a great deal of concern. This was even more troubling since soy has been shown to reduce cancer¹⁻⁵ and improve heart, vessel and bone health.⁹ It was thought that some of soy's effects were due to the estrogenic isoflavones it contains.^{4,5,10-11} Unfortunately, what had been considered a dietary weapon for those with breast cancer was no longer a sure thing.^{5,10,12}

The Shanghai Breast Cancer Survival Study

This study included over 5,000 breast cancer subjects in China (ages 20-75) who were diagnosed between 2002 and 2006 and followed up until 2009.¹¹ Data was collected every six months after the diagnosis of cancer and there were follow-up interviews at 18 months, three years and five years post-diagnosis. The researchers also evaluated a host of other factors including sociodemographic, socioeconomic, treatment (chemotherapy, radiation, immunotherapy, surgery, and hormone therapy like tamoxifen), education, income, supplement use, dietary patterns, activity levels, body mass index, ER (+/-) status and cancer stage. Most importantly, this was a study on free living humans, rather than cell cultures or rodents.

Results and Observations

I've presented the results as direct quotes from the study, followed by my comments. These results are so powerful that I did not want to paraphrase, summarize or reword them due to the important decisions providers, the afflicted and their families must make.

- "Soy food consumption after cancer diagnosis, measured as soy protein intake, was inversely associated with mortality and recurrence. The association of soy protein/isoflavone intake with mortality and recurrence appear to follow a linear dose-response pattern until soy protein intake reaches 11 grams a day (or soy isoflavone intake reaches 40 mg a day). After these points, the association appears to level off or even rebound." COMMENT: No matter your age or the disease stage, a serving of soy each day is a good habit. But, just because some is good does not mean more is better.
- "Tamoxifen was associated with reduced risk of relapse or breast cancer-specific mortality

among women with ER-positive breast cancer." COMMENT: No surprise here.

- "In our study, we found that soy food intake was associated with improved survival regardless of tamoxifen use, while tamoxifen use was related to improved survival only among women who have low or moderate levels of soy food intake. Tamoxifen was not related to further improvement of survival rates among women who had the highest level of soy food intake. More importantly, women who had the highest level of soy food intake and who did not take tamoxifen had a lower risk of mortality and a lower recurrence rate than women who had the lowest level of soy food intake and used tamoxifen, suggesting that high soy food intake and tamoxifen use may have a comparable effect on breast cancer outcome." COMMENT: Expect a push-back from Big Pharma.
- "In our comprehensive evaluation of soy food consumption and breast cancer outcome using data from a large, population-based cohort study, we found that soy food intake was inversely associated with mortality and recurrence. The inverse association did not appear to vary by menopausal status and was evident for women with ER-positive and ER-negative cancers and early and late-stage cancers." COMMENT: Human studies trump animal and test-tube experiments every time. The huge news is that soy helped across the board - early stage to late stage of the disease, pre- or post-menopausal status, and both receptor positive and negative classes. Until opponents of soy present compelling human data, the dangerous advice for anyone with breast cancer is that they should avoid soy.
- "In summary, in this population-based prospective study, we found that soy food intake is safe and was associated with lower mortality and recurrence among breast cancer patients. The association of soy food intake with mortality and recurrence appears to follow a linear dose-response pattern until soy food intake reaches 11 grams a day of soy protein; no additional benefits on mortality and recurrence were observed with higher intakes of soy food."

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