



WOMEN'S HEALTH

Can a Multivitamin Reduce Breast Cancer Recurrence?

James P. Meschino, DC, MS

There is a great deal of controversy regarding the value of multivitamin supplements in cancer prevention. However, with respect to preventing breast cancer recurrence, an important study was published in the *Journal of Breast Cancer Research and Treatment* in 2011 by Kwan ML, et al. The LACE (Life After Cancer Epidemiology) Study involved 2,236 women diagnosed from 1997-2000 with **early-stage** breast cancer (Stage I \geq 1 cm, II, or IIIA). Participants were enrolled about two years post-diagnosis.¹ Multivitamin use pre-diagnosis and post-diagnosis was assessed via mailed questionnaire.

Greater Benefit Than Diet and Exercise Alone

For women in the top 25 percent of the cohort in terms of adhering to a healthy lifestyle, defined as a healthy diet (consuming at least 5.5 servings of fruits and vegetables per day) and physical activity (engaging in non-sedentary activity of at least 16 hours/week), persistent multivitamin use was associated with a 60-70 percent reduction in risk of dying from any cause during the two-year follow-up period. No associations were observed among women leading less healthy lifestyles.

Furthermore, among women who only had radiation therapy and no chemotherapy as part of their adjuvant treatment, multivitamin use was associated with a consistent reduction in risk of recurrence, breast cancer death and overall death.



According to the researchers, these results add to the evidence that multivitamin use after a breast

cancer diagnosis may be safe, and suggest consistent use of multivitamins may add a further survival benefit to subgroups of breast cancer survivors who already follow a healthy lifestyle, and those who have been treated by radiotherapy (but not chemotherapy).

The evidence showed that women who strongly adhered to a healthy lifestyle achieved further benefit from taking multivitamins, specifically lowering their risk of dying from any cause. However, using multivitamins as the *only* preventive action did not seem to be beneficial, as results showed that among the non-healthy lifestyle followers, multivitamin use did not appear to influence prognosis. This suggests other lifestyle factors (diet, exercise) play a larger role in influencing breast cancer outcomes, and that use of a multivitamin enhances the efficacy of these proactive lifestyle strategies (hence the term *supplement*).

In previous LACE analyses, it was shown that consuming a more healthful diet of fruits and vegetables, whole grains, and poultry, and engaging in at least moderate physical activity, were each associated with decreased overall mortality, but not breast cancer-related outcomes.¹

Previous Studies and Anti-Cancer Mechanisms

Many experimental studies have shown that various vitamins and minerals exhibit a variety of anti-cancer properties including anti-angiogenesis, immune modulation, enhancing cell differentiation, inhibiting tumor cell proliferation, and inducing apoptosis.²⁻³ A human intervention trial assessing the effects of antioxidant supplements on breast cancer survival showed promising results in preventing cancer recurrence.

This prospective study of 4,877 breast cancer survivors in Shanghai, China, examined antioxidant use (vitamin C, vitamin E, and/or multivitamins) during the first six months post-diagnosis, and showed it was associated with decreased risk of cancer recurrence (22 percent reduction) and overall mortality (18 percent reduction).⁴

In another LACE analysis assessing the influence of individual supplements, the researchers noted that post-diagnosis use of vitamin C was associated with a 27 percent reduced risk of breast cancer recurrence, and vitamin E was associated with a 24 percent reduced risk of breast cancer recurrence and overall mortality.¹

A study published in March 2014 in the *Journal of Anticancer Research* found breast cancer survivors who had more optimal blood levels of vitamin D had twice the survival rate compared to those with lower vitamin D blood levels.

These researchers analyzed data from five large breast cancer studies involving a total of 4,443 breast cancer patients, with an average follow-up period of nine years. The data showed that women who had an average vitamin D blood level of 30 ng/ml (75 nmol/L) experienced survival rates double that of women who had an average blood vitamin D blood level of only 17 ng/ml (42 nmol/L).

Vitamin D has been shown to reduce cancer development and progression in a number of ways, according to research:⁵

- Slows the rate of cell division, which reduces the likelihood that cancerous mutations will emerge.
- Promotes maturation (differentiation) of newly formed cells, which reduces their transformation to a cancerous state.

- Favorably modulates the function of immune cells, many of which are responsible for identifying and destroying emerging cancer cells.
- Responsible for increasing the cell's production of a surface receptor (antennae) known as [E-cadherin](#), which enables the cell to bind to and communicate with adjacent cells or supporting tissues. Aggressive cancer cells tend to have low levels of E-cadherin, which enables them to replicate unchecked by adjacent cells, giving themselves the green light to invade adjacent tissues and spread into the blood and lymphatic system in their quest to metastasis throughout the body.

Clinical Takeaway

From a total perspective, evidence is emerging to show that female breast cancer survivors may be well-advised to adopt proactive lifestyle strategies to help reduce cancer recurrence and reduce overall mortality. Eating at least five fruit and vegetable servings per day, along with regular exercise, is highly supported by the findings of the [LACE study](#). Adding a multivitamin to this game plan appears to provide further benefit, with special emphasis on doses of vitamin C and vitamin E, according to the LACE and Shanghai studies.

Other recent studies encourage the attainment of a blood level of vitamin D at or above 30ng/ml (75 nmol/L) and the frequent inclusion of soy foods (with high isoflavone content) as part of an anti-cancer diet program.

With respect to multivitamins, the researchers in the LACE study conclude, "In stratified analyses, women who consistently used multivitamins before and after diagnosis and ate more fruits/vegetables (p for trend = 0.008) and were more physically active (p for trend = 0.034) had better overall survival. Multivitamin use along with the practice of other health-promoting behaviors may be beneficial in improving breast cancer outcomes in select groups of survivors."¹

Although additional research is required before definitive statements can be made, health practitioners should alert breast cancer patients to these emerging findings as a means to help them make an informed decision about proactive lifestyle strategies they may wish to pursue to help prevent cancer recurrence and improve survival.

References

1. Kwan ML, Greenlee H, Lee VS, et al. Multivitamin use and breast cancer outcomes in women with early-stage breast cancer: the Life After Cancer Epidemiology (LACE) Study. *Breast Cancer Res Treat*, 2011 Nov;130(1):195-205.
2. Reddy BS. Micronutrients as chemopreventive agents. *IARC Sci Publ*, 1996;139:221-35.
3. Kelloff GJ, et al. Mechanistic considerations in the evaluation of chemopreventive data. *IARC Sci Publ*, 1996;(139):203-19.
4. Nechuta S, et al. Vitamin supplement use during breast cancer treatment and survival: a prospective cohort study. *Cancer Epidemiol Biomarkers Prev*, 2011;20(2):262-71.
5. Mohr SB, Gorham ED, Kim J, et al. Meta-analysis of vitamin D sufficiency for improving survival of patients with breast cancer. *Anticancer Res*, 2014 Mar;34(3):1163-6.

DECEMBER 2016