

Are phytoestrogens safe for breast cancer patients?

Commentary by:

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A woman with oestrogen-dependent breast cancer asks if it is safe to take phytoestrogen supplements.

Case scenario

A patient of mine who has breast cancer, and is postmenopausal, has asked me if it is safe for her to take phytoestrogens in tablet form, or as an increased component of her diet. She has read of the benefits of phytoestrogens in relieving menopausal symptoms, but is concerned that her oestrogen-dependent cancer may be stimulated by these supplements. What should I tell her? Would these supplements interfere with the tamoxifen she is taking? Would it be different if her cancer were oestrogen-receptor negative?

Commentary

There is a widespread belief that consumption of a diet rich in phytoestrogens will not only alleviate postmenopausal symptoms but protect against cardiovascular disease and cancer. This concept has emerged from epidemiological studies that demonstrate inverse relations between menopausal symptoms, cardiovascular risk and cancer, and either a high phytoestrogen intake or high urinary phytoestrogen levels.¹ However, there are no rigorous data to substantiate these proposed health benefits of

phytoestrogens, particularly with respect to menopausal symptoms and cancer prevention.

Studies to date have either shown no benefit or provoked concern. With respect to postmenopausal symptoms, most studies have demonstrated that high doses of phytoestrogen supplementation in the form of either soy flour or tablets of concentrated extracts are no better than placebo in reducing hot flashes. Some studies do suggest an improvement in vaginal cytology; however, this is not universal. Importantly, there are no documented benefits in terms of other menopausal symptoms, although in general this has not been well evaluated.

Specifically with respect to breast cancer, published data are conflicting and confusing. In breast cancer cell lines, certain concentrations of phytoestrogens (equivalent to circulating levels seen in humans consuming a moderate to high phytoestrogen intake) stimulate cell growth in oestrogen-receptor positive [ER(+)] but not oestrogen receptor negative [ER(-)] cells.² In contrast, very high concentrations (greater than circulating blood levels achievable by diet) of phytoestrogens inhibit cell growth in both ER(+) and ER(-) breast cancer cell lines.³ Of greater concern, very recent studies of tamoxifen and breast cancer cell lines indicate that the addition of phytoestrogens interferes in the action of tamoxifen on the cancer cells.⁴ In a clinical setting in premenopausal women, phytoestrogens have been shown to be concentrated in aspirated nipple fluid, and have oestrogen-like actions on normal breast cell markers.⁵ To date, no studies have been conducted that address the safety or efficacy of phytoestrogens in women with breast cancer in a clinical setting.

Finally, not all epidemiological studies support favourable effects of phytoestrogen consumption in terms of breast cancer prevention in postmenopausal women. Two studies, one conducted in Singaporean women,⁶ and another in Chinese women,⁷ did not show any risk reduction in postmenopausal women in association with high soy intake.

In summary, in ER(+) breast cancer, exogenous phytoestrogens may stimulate cancer cell growth when consumed in low to moderate concentrations – that is, an amount obtainable from a supplemented diet. It is possible that very high dose phytoestrogens may have an inhibitory effect on breast cancer cell growth in this setting; however, the amount that needs to be consumed to achieve such an end is not known. Concern exists regarding adverse effects that may occur when women take excessive amounts of phytoestrogens. There is increasing evidence that phytoestrogens interfere with the effects of tamoxifen on breast cancer cells, and thus women on tamoxifen should currently be advised not to take additional phytoestrogens apart from that obtained from a varied diet of fruit, vegetables and grains.

Evidence from cell line studies would suggest that low phytoestrogen intake has little or no effect on ER(-) breast cancer cells, but very high concentrations may be inhibitory to cancer cell growth. Again, it is not known how much a woman would need to consume to have any positive effect, and this needs to be researched further.

Therefore, at this time, multiple studies indicate no benefit with phytoestrogens in terms of symptomatology, and probable risk for women with ER(+) breast cancer. For women who are taking tamoxifen, phytoestrogen supplementation cannot be recommended. **MT**

A list of references is available on request to the editorial office.

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