

The Confusion About Soy And Breast Cancer

Valerie Franc B.Sc., N.D., C.Ht.

Doctor of Naturopathic Medicine

Certified Hypnotherapist

There has been much controversy and confusion about the safety of eating soy if you have been diagnosed with breast cancer. Soy contains ‘phytoestrogens’, tiny components of the plant that act as weak estrogens in the body. Many breast cancer (as well as other types of cancer) tumors are estrogen positive – meaning that they grow bigger and faster when they come in contact with estrogen. As well estrogen has been shown to play a role in cancer formation. This has caused a concern for some oncologists as well as patients, who feel that plant based ‘pseudo-estrogens’ will greatly increase the likelihood of developing cancer. On the other hand, there are many doctors and researchers that promote the use of soy products. They feel that eating soy actually helps prevent breast and other types of estrogen related cancer. Who do you listen to?

Here’s What We Know:

Phytoestrogens can be split into two different types, isoflavones and lignans. Soy products contain isoflavones, specifically ones called genistein and daidzen (genistein is stronger than daidzen). Some herbs, legumes and sprouts also contain isoflavones. Flaxseeds are a common source of lignans, but they can also be found in pumpkin seeds, berries, some vegetables and many grains.

We are so used to hearing the term estrogen that we commonly think it is just one molecule, but it is not. There are 3 types of estrogen found in the body, each with different strengths. Estriol is the weakest acting form of estrogen, and has been associated with protection against cancer. Estrone and estradiol are much stronger acting forms of estrogen. These two forms are associated with cancer formation. It is interesting to note that almost all forms of hormone replacement therapy and birth control pills use a form of estrogen known as 17 beta-estradiol. This is the strongest estrogen and is known to promote cancer.

Pro Soy

Phytoestrogens act as weak estrogens (similar to estriol). They bind to breast (and other estrogen sensitive tissues such as the uterus) cell receptors, and prevent other stronger estrogens (such as estrone and estradiol) from binding. As a result strong estrogens are unable to act on tissues and are excreted from the body, preventing them from initiating cancer growth (1). Although phytoestrogens are strong enough to bind to the receptors, it is important to note that they are too weak to affect the DNA of the cell. Therefore they are unable to promote or initiate breast cancer. Another benefit of phytoestrogens is that they increase the production of steroid hormone binding globulin (SHBG). SHBG is responsible for binding to estrogen and carrying it through the blood. As the number of these transporter molecules increases, the amount of free estrogen available to bind to tissues decreases. Therefore there is less estrogen available to promote cancer growth and formation. In short phytoestrogens can have an anti-estrogenic affect on breast and

uterine tissues. At the same time, they still have a weak estrogenic effect on other tissues such as bone (this is important in osteoporosis treatment and prevention).

Research has shown that soy isoflavones (particularly genistein) can help prevent as well as reverse breast cancer (2,3). They have been found to be involved in processes that help the cell to grow and divide normally. They also help protect cells from being damaged by free radicals (well known to accelerate aging as well as cause cancer). In this way they help prevent cancer (4). There is evidence that they are involved in a process (called apoptosis) that tells damaged cells to die. They have been proven to prevent cancer cells from making new blood vessels and can turn off breast cancer genes (by shutting down protein kinases). As a result phytoestrogens can help treat cancer as well. Studies of differing populations show that women in North America are 2/3 more likely to develop breast cancer than Asian women, who eat an average of 50 grams of soy per day (5).

Against Soy

The main argument against soy products is that all estrogens are bad estrogens whenever breast cancer is concerned. Better to be safe than sorry is a motto for some. Since the phytoestrogens in soy look similar to and admittedly act as weak estrogens, they must act like strong estrogens too. This thinking however is incorrect, as it assumes that all estrogens weak or strong act the same.

Let's review some facts about estrogen. As previously stated, the estrogens in our bodies are not one but three different molecules, and each of the molecules have a particular strength. Estradiol is the strongest of the three, and is used in estrogen containing hormone replacement and birth control pill formulas. Estradiol has been proven in research to bind to receptors in estrogen sensitive tissues (such as breast and uterus) and stimulate growth. It can actually affect DNA in the cells, and therefore increases the likelihood of damage occurring. Estrone is weaker in strength than estradiol, but is still considered strong acting. Estrone and estradiol can be converted into each other in the body as well. Therefore estrone has the same cancer initiating and promoting effects as estradiol. Estriol, the third type of estrogen molecule has a weak acting effect on the body. This estrogen molecule looks very similar to phytoestrogens, and acts very weakly on breast and uterine tissues. Research has actually shown this type of estrogen can help prevent cancer. The reasons for this are similar to those supporting the use of soy in breast cancer treatment and prevention. Estriol binds to receptors and therefore prevents stronger acting estrogens from doing so. Therefore these stronger estrogens are unable to cause damage.

There is also new evidence supporting the thought that the three estrogens affect tissues differently. It has been found that weak acting estrogens are more active on tissues such as bone, and less active on tissues such as the breast and uterus. It is this understanding of the different forms and actions of estrogens that have produced a new type of drug called a SERM (Selective Estrogen Receptor Molecule), which is being used in the treatment of osteoporosis (Note: this drug is currently being researched as an alternative to Tamoxifen in breast cancer prevention). Another important thing to remember is that estrogens can have a positive effect on our bodies as well. They are known to promote bone growth and

help prevent osteoporosis. Therefore it is too much of the strong estrogens (i.e. estradiol and estrone) that lead to cancer growth and development. Estriol is helpful in preventing breast cancer, and phytoestrogens (which have a similar action in the body) are as well.

While phytoestrogens are not in and of themselves associated with the promotion and initiation of cancer, there is a reason to be cautious of some soy products. In the last decade in particular soy products have been genetically altered to increase production and crop yields for farmers. The concern is that as a result soy products are being saturated with pesticides, which are contaminating foods products and increasing the incidence of breast and uterine cancer in those who consume high amounts. Therefore experts in the field currently recommend eating only organic soy products and limiting soy in particular to 1 serving per day. As well pesticide soaked soy byproducts (i.e. left over waste that is not used when making soy milk and tofu) are being used as fillers in many processed and packaged foods such as hotdogs. By reading all your labels carefully and eating only non-genetically modified and organic soy products, you can avoid the pesticides and lower your risk of breast cancer.

How Much Should I Be Getting?

In general 80 to 160 mg of isoflavone, or 35 to 60 grams of organic soy per day is recommended to help prevent breast cancer. In her book “A Call To Women: The Healthy Breast Program and Workbook” (this book is a must have for every woman!), Sat Dharam Kaur N.D. recommends what she refers to as the “Fabulous Five”

1. Freshly Ground Flaxseed: 2 – 4 Tablespoons daily
2. Organic Tofu and Soy Products: ½ cup tofu or 1 ½ cups soy milk daily
3. Raw Pumpkin Seeds: 1 – 2 Tablespoons daily
4. Clover Sprouts: 3 or more cups weekly
5. Mung Bean Sprouts: 3 or more cups weekly

Eating these five foods as recommended will make sure you get all the isoflavones and lignans you need. If these foods don't appeal to you, or if you are having difficulty incorporating them into your diet, you can get isoflavones in a capsule form from your local health food store (be sure to get a good, reputable brand – see your local Doctor of Naturopathic Medicine for suggestions).

Best wishes to all.

References

1. Walker, Morton. *Soybean isoflavones lower risk of degenerative disease. Townsend Letter For Doctors And Patients, Aug/Sept, 1994.*
2. Ingra, D.K. Saunders, M. Kolybaba, D. Lopez. *Case controlled study of phytoestrogens and breast cancer. Lancet, 1997;350 Oct 4:990-93*
3. Ingra, D.K. Saunders, M. Kolybaba, D. Lopez. *Phyto-estrogen and breast cancer. Int. Clin. Nutr. Rev., 1998; 18(1):35-36*

4. *Constantinou et al. Untitled. Cancer Res, 1990; 50:2618-24*
5. *Kennedy, A. The evidence for soybean products as cancer preventative agents. J. Nutr., 1995; 125:733*