



RECOMMENDATIONS FOR PREVENTING BREAST CANCER

There is no one single way to reduce your risk of breast cancer, but a combination of approaches could make a difference.^{1,2}

DIET

1. EAT A LOWER "GLYCEMIC" DIET.

Diets high in refined carbohydrates and concentrated sugars trigger higher levels of insulin in the body, which contribute to greater estrogen production, inflammation, and growth factors (IGF-1) that support cancer growth. High levels of insulin have been associated with increased risk of breast cancer, and poorer survival after diagnosis.³

2. EAT ORGANIC.

Organic foods are free of pesticides, whose breakdown products are endocrine disruptors. Organic foods contain more trace minerals and other nutrients such as flavanoids (19-60% more), which are naturally occurring antioxidants.⁴ Use meat, chicken and dairy products that are hormone and antibiotic free. Buy open water (wild), rather than farm raised fish.⁴

3. EAT APPROPRIATELY

Eat moderate portions of food. Obesity (BMI>30) is associated with an increased risk of breast cancer, and an increased likelihood of cancer recurrence. Maintaining a stable weight through adulthood is associated with a lower risk of breast cancer. While large (45-70 #) increases in weight throughout adulthood are associated with 50-90% increased risk of post-menopausal breast cancer, even modest post-menopausal weight gains (5-20#) have been associated with a 30% increased risk.⁵ If you have gained weight and have difficulty losing weight, then regular exercise and a low glycemic, lower fat, higher fiber, and high fruit and vegetable diet will help to reduce your risk.²

4. INCLUDE NATURAL SOY FOODS IN YOUR DIET

Most population studies show a decreased risk and some no change of risk for both premenopausal and postmenopausal breast cancer incidence and recurrence with soyfoods.⁶⁻⁹

- **Postmenopausal:** The results of studies on soy suggest an advantage for post-menopausal women consuming soy products (especially for ER+PR+)^{6,8,10-14}, with at least one study indicating the higher the soy intake, the greater the decreased risk in recurrence.¹⁵ The association between soy intake and reduced breast cancer recurrence includes a large study of American women (the LACE study).⁸ In the largest Asian study, the "benefit of soy on mortality and recurrence appears to reach its peak at moderate levels of soy [isoflavone] intake (36.6–62.7 mg/day)."¹⁶ This is equal to roughly 2 servings of natural soy foods (tofu, tempeh, soy milk, edamame, etc.) daily.
- **Premenopausal:** For premenopausal women, a number of studies have shown a reduced risk of breast cancer with a higher soy intake^{6,17,18} or no change.^{11,14} In one study, the highest soy intakes were associated with increased hot flashes in premenopausal women, suggesting an anti-estrogen effect.¹⁶

In premenopausal women, soy consumption has also been shown to reduce the production of estrogen byproducts that may become toxic to breast cell DNA (4-OH estrone) and thus be responsible for cancer initiation.¹⁹

Two studies had suggested that soy exerted an estrogenic-like effect on breast tissue, but year-long studies indicated that isoflavone supplements do not affect breast tissue density in premenopausal women.²⁰ However, the use of extremely high doses of isolated soy isoflavones (over 200 mg/day) as a separate supplement could be problematic for premenopausal women, and should be avoided.^{21,22}

- ER-/PR- breast cancer. Studies have suggested a reduced incidence^{10,17} or no change in the incidence of breast cancer in women consuming higher amounts of soy.
- For breast cancer prevention, a high soy intake during adolescence and continuing through adulthood has the best prospects for reducing risk.⁷
- A general rule of thumb for the soy novice is to include a serving of soy foods about 3-5 times weekly. Postmenopausal women who may want to consider daily servings of soy. Women in Asia have as many as 2 servings daily, and that level of soy intake is considered safe by the Academy of Nutrition and Dietetics for women with breast cancer, and closer to the higher levels of isoflavones that appear to be associated with reduced breast cancer risk.
- A serving of soy is approximately 1 cup of soy milk, 3 ounces of tofu, 1/2 cup of edamame, 3/4 ounce of dry roasted soybeans, 6-8 ounces soy yogurt, or 2-3 ounces of tempeh. Soy is best taken in small amounts on a consistent basis, as a constant intake appears to help change the dynamics of the cancer cells.²³ Until we have further information avoid soy extract powders with high isoflavone content (more than the usual 20-40 mg per serving) and capsules containing high amounts of genistein and or daidzein.
- Do NOT start eating a lot of soy products if you are at the beginning stages of hypothyroidism. However, women who are already hypothyroid should not experience any problems with soy.

5. EAT BRIGHTLY COLORED FRUITS AND VEGETABLES

10 portions bright-colored fruits and vegetables each day. We are adapted to these over millennia of evolution.^{24,25} Jeff Bland, Ph.D., a nutritional biochemist, considers cancer to be, in part, a phytonutrient deficiency disease. A diet high in raw salad vegetables and olive oil has even been associated with a large decreased risk of developing HER-2 positive breast cancer.²⁶ Include the following in your diet:

- Fresh grapes, or raisins daily (limit portions due to higher glycemic index)
- Tomatoes daily, in any form (Tomato juice, soup, V-8 juice, tomato sauce, fresh or canned tomatoes, dried tomatoes)
- One or more serving of beta carotene rich fruits and vegetables daily, such as mangos, carrots or carrot juice, papaya, winter squash, cantaloupe, sweet potatoes
- One serving of dark green leafy or cruciferous vegetables daily. Dark green leafy vegetables include spinach, chard, dark romaine lettuce, broccoli, kale, etc. Dark green leafy vegetables contain various important carotenoids (such as beta-carotene) and folic acid. See #8 for information on cruciferous vegetables.
- Onions are an excellent source of well-absorbed quercetin, which has anti-cancer properties.
- Berries. Many berries contain anti-cancer phytonutrients in addition to their antioxidant effects. These include black and red raspberries, strawberries, lingonberries, black and white currants, gooseberries, velvet leaf blueberry, low-bush blueberry, sea buckthorn (sea buckthorn is in *Beyond Essential Fats by Natura*) and cranberries.
- Salads are an excellent way to get large amounts of raw vegetables. Don't limit yourself to just salad greens. Add other vegetables, fruits, and nuts to make your salad even higher in

phytonutrients. One study showed that a high salad/olive diet was associated with a reduced risk of a particular type of breast cancer (Her-2+).²⁶

- Juicing vegetables can be an excellent way to get some servings of vegetables. Carrots, celery, beets, cucumbers, kale, chard, spinach, broccoli, sprouts, etc. can all be juiced in order to obtain high amounts of phytonutrients. Be careful of making your juices too sweet, as even natural sugars can increase insulin levels, which are proinflammatory. Use celery, cucumber, and green vegetable juices to cut down on the sweetness of carrot juice and limit fruit juices to small amounts for flavor.
- Soups are also an excellent way to get vegetables. In the summer try chilled soups such as gazpacho; in the winter go for soups rich in different vegetables, legumes, and whole grains, such as minestone.

6. EAT APPROPRIATE FATS

- Limit fat to 20-30% of your caloric intake. High fat diets are associated with certain cancers, such as breast²⁷ and colon cancer. However, a diet that is too low in fat can be harmful, because it may lack sufficient essential fatty acids.
- Get sufficient omega 3 fatty acids. Sources are coldwater fish*, nuts (especially walnuts and filberts), flax seeds (ground) and flax seed oil, canola oil, and wild game or free range animals.
- Limit omega 6's (meat; dairy fat; corn, safflower, sunflower, soy oils) which contribute to the body's inflammatory processes (through prostaglandin PG2 series). These inflammatory processes have been found to promote cancer growth.
- For salad dressings, use olive oil (which contains squalene), flax seed oil and/or walnut oil. Bake with organic flax or canola oil, but fry or sauté with olive oil.^{28,29}
- Eating a Mediterranean style diet, which is low in animal fats (and proteins) may also help to lower breast cancer risk.³⁰

To protect your oils from becoming rancid and harmful:

- Add the contents of one 400 IU mixed, natural, tocopherol vitamin E capsule to your canola oil.
- Add the contents of two 400 IU mixed, natural, tocopherol vitamin E capsules to your flax seed oil.
- Refrigerate all your oils, but especially canola, flax, and walnut oil.
- A good source of natural vitamin E is Carlson Labs E-Gem Elite, which has all 8 forms of vitamin E (4 tocopherols and 4 tocotrienols). Carlson Labs is frequently carried in health food stores and is available through vitacost.com (phone orders are best). Gamma tocopherol, which is not present in pure alpha-tocopherol supplements, nor in high levels in most mixed tocopherol supplements, may have the most cancer and heart protective activity of the tocopherols³¹.

Avoid trans fats entirely. Trans fats are hardened vegetable fats often found in margarine, and any processed food, such as baked goods and crackers, that contains partially hydrogenated vegetable oils. The amount of trans fat is listed on the label. However, if the amount per serving is less than 1/2 a gram, they allowed to list the product as having 0 trans fats. Thus, you can actually be getting a substantial amount of trans fat in your diet while consuming 0 trans fat products. Thus, anything with “partially hydrogenated oil” will have trans fats in it, regardless of the label.

7. GET PLENTY OF FIBER

Fiber traps, prevents reabsorption, and eliminates toxins in the bowel, as well as increases the “good” bowel bacteria. Whole grains, fruits and vegetables and flax seed (see below) provide excellent fiber. Whole grains, nuts, and legumes also contain IP6 (inositol 6-hexaphosphate or phytic acid). IP6 inhibits cancer cell proliferation and increases cancer cell differentiation. It has shown anticancer activity in breast^{32,33}, colon, liver, prostate tissue³⁴ and experimental tumors. Whole grains, nuts and legumes contain from 1 to 7% IP6 by dry weight.

8. FLAX SEEDS

- Buy raw, whole, organic regular or golden flax seeds. These can be stored in an airtight container in a cupboard. They do not need to be refrigerated.
- Grind the flax seed in a coffee grinder (grind to a “fine” grind), then store in a sealed container in the freezer.
- As an alternative, you can buy vacuum-packed flax seeds pre-ground. Be sure they are fresh—they should not have any bitter flavor to them. If they do, they are rancid. Once open, store in the freezer. If you grind your own, you can grind them as coarse or fine as you like depending upon how you are using them. For smoothies and baking, a finer grind than the pre-ground offers works better.
- Eat up to 4 tablespoons of ground flax seed per day, as tolerated. Good on cereal, salad, soup, and in yogurt, or in smoothies. They make an excellent thickener for smoothies.
- Two Tablespoons of ground flaxseed weigh about 13 grams.
- Flax seeds are an excellent source of soluble fiber, which helps to normalize bowel function.
- Flax seeds contain lignans, which may have a preventative role in prevent breast, colon, and lung cancers^{35,36}.
- A small, double-blind study in women recently diagnosed with breast cancer showed decreased cancer markers and increased programmed cell death (apoptosis) in women who ate 25 grams of flax seed daily in a muffin.³⁷
- One animal study suggests that flax seed enhances tamoxifen’s inhibition of breast cancer tumors.³⁸
- Flax seeds help to reduce the estrogen load one’s body by a number of mechanisms, including binding with estrogens in the gut, which eliminates them; reducing the amount of estrogens that the body makes; and helping the body to make weaker, rather than stronger, estrogens. As a soluble fiber, flax also helps to reduce insulin levels, which, when elevated, drive estrogen manufacture, and growth factors (such as IGF-1) which promote cancer growth.

9. WATER

Drink 48-64 ounces per day (4-6 glasses). Use filtered, spring or purified water in preference to tap water or distilled water. Best storage is glass, next best ceramic lined aluminum (SIGG brand) or stainless steel. The worst is hard polycarbonate plastic (often used in camping bottles) followed by soft plastics.³⁹⁻⁴²

What else can you drink beside water? Try:

- ❖ green tea (see #13 and #14 below),
- ❖ ginger tea for its anti-inflammatory actions
- ❖ other herbal teas
- ❖ 100% juices (in limited amounts & mixed with water)
 - Citrus juice (with pulp)
 - Apple juice (unfiltered)
 - Berry juices (raspberry, blueberry)
- Cranberry juice (unsweetened or combined with apple juice)
- Red grape juice
- Pomegranate juice
- ❖ Soy milk (unsweetened)
- ❖ Low-sodium V-8 juice and other vegetable juices

10. CRUCIFEROUS VEGETABLES

These include broccoli and broccoli rabe, bok choy, Brussels sprouts, cauliflower, cabbage, collards, mustard greens, turnip greens, and watercress. 5-7 servings per week at a minimum.

Cruciferous vegetables stimulate our body’s detoxification system--both Phase I and Phase 2 detoxification processes in the liver. Cruciferous vegetables contain:

- Calcium D-glucuronate which binds estrogen in phase 2 detoxification.⁴³
- Indole-3-carbinol (I3C), which is also converted in the body to DIM, suppresses tumor cell growth and metastatic spread.⁴⁴⁻⁴⁷ I3C/DIM promotes metabolism of estrogens to 2-OH estrone, which has weak estrogen activity (protective against breast cancer in mice) rather than 16-alpha-OH-estrone,^{48,49}

or 4-OH-estrone, which are estrogen agonists, and may support tumor growth. Prospective studies have shown that higher ratios of 16:2 estrones are associated with increased rates of breast cancer in postmenopausal women.⁵⁰ Consuming more of cruciferous vegetables can favorably alter your 16:2 estrone ratio⁵¹

- Sulforaphanes, which help to prevent cancer through many different mechanisms⁵²⁻⁵⁷ Three-day old broccoli sprouts are the richest source of sulforaphanes.
- Soy and flax, as well as cruciferous vegetables, also increase the 16:2 estrone ratio.^{58,59}

11. GET ADEQUATE PROTEIN

- Vegetable sources of protein are the healthiest in terms of cancer prevention. Legumes, such as beans, peas, lentils, and soy products are good sources of low-fat protein, as well as providing complex carbohydrates, and fiber. Foods such as middle-eastern hummus; split pea, lentil, minestrone, or black-bean soup; East Indian dahl, three-bean salad, low-fat refried beans, etc. are all tasty and easy to find legume dishes. Nuts in small amounts also can be used to supplement one's protein intake.
- If you customarily eat soy products, continue to use them. There is new evidence that a higher soy (and vegetable diet) is associated with a decreased risk of breast cancer in women. This may be limited to women who grew up eating tofu, however.⁹ There is evidence that continued soy use from adolescence throughout adulthood is associated with lower pre-menopausal breast cancer risk.⁷
- A general rule of thumb is to include a serving of soy foods about 3-5 times weekly. A serving of soy is approximately 1 cup of soy milk, 3 ounces of tofu, 1 cup of edamame, 3/4 ounce of dry roasted soybeans, 6-8 ounces soy yogurt, or 2 ounces of tempeh. Soy is best taken in small amounts on a consistent basis, as a constant intake appears to help change the dynamics of the cancer cells.²³ Until we have further information avoid soy extract powders and capsules containing high amounts of genistein and/or daidzein.
- The consumption of fish rich in omega-3 fatty acids also is associated with decreased breast cancer risk. Please see the footnote on fish regarding mercury content.¹
- Whey protein is a good alternative source of protein, and is high in glutamine. High doses of glutamine increase the level of glutathione in normal cells and decrease it in cancer cells, making them more likely to be affected by chemo and radiation.

The best whey protein will be:

- organic or from cows that are grass fed and not subjected to bovine growth hormone, antibiotics, or pesticides.
- low-heat processed and un-denatured, containing biologically active, immune boosting proteins.
- One example is Source Naturals "The True Whey" which is available at Vitacost.com and is often available through local health food stores.

¹ *Avoid: tilefish, swordfish, shark, and king mackerel which have 0.73-1.45 parts per million of mercury.

- Use rarely: Red snapper, orange roughy, marlin, grouper, tuna steaks (bluefin, yellowfin [ahi], bonito, skipjack) American lobster, bluefish, halibut, sablefish, and Pollock, which have 0.2-0.72 parts per million.
- Use more frequently: cod, mahi mahi, canned tuna, crab (blue and Dungeness) haddock, whitefish, herring, spiny lobster, and perch, which contain 0.10-0.19 ppm.
- Use frequently: king crab, catfish, scallops, flounder/sole, salmon, oysters, shrimp, clams, and tilapia
- USDA Office of Seafood May 2001. There is a link to this and other sites that address safe seafood on our website, in the screen "Healthy food/healthy planet".

- If eating meat, use organic free-range, grass-fed meat. This meat will tend to have lower omega-6 fats and higher of the cancer-preventing omega-3 fats, and will be free of hormones and antibiotic residues..
- Eating a Mediterranean-style diet, which is low in animal protein, may also help to decrease breast cancer risk.³⁰

12. LIMIT RED MEAT AND AVOID PROCESSED, OVER-COOKED OR CHAR-GRILLED MEATS

Eating red meat on most days of the week moderately increased the risk of premenopausal breast cancer, but only the type that is sensitive to estrogen.⁶⁰ Even eating meat during adolescence increases this risk.⁶⁰ Changing to a “meat-sweet” diet also increased the risk of this type of breast cancer in Chinese women, who typically eat a “vegetable-soy” diet.⁶¹ Women who consumed high amounts of total meat, red meat, and processed meats such as ham, pepperoni, corned beef, bacon, luncheon meats, and sausage had significantly higher risks of post-menopausal breast cancer than women who ate less. Studies also have shown that the consumption of well-done meats (such as burgers, steak, bacon) may increase risk of developing breast cancer by almost 5 times. (Although this is still controversial, some women may have a common genetic variation that more efficiently turns certain products found in well-done meats into carcinogens.)

13. REDUCE BETA-D-GLUCURONIDASE

Elevated beta-D-glucuronidase activity in the gut is associated with an increased risk for various cancers, particularly hormone-dependent cancers such as breast, prostate, and colon cancers⁶². Its activity is enhanced by a high animal fat diet. (Another reason to avoid meat; well done meat is even more harmful). Fiber, lactobacillus, oranges, onions, garlic, and greens decrease beta D- Glucuronidase.

14. CURRIES: TUMERIC (CURCUMIN) AND GINGER

Curcumin, which is food in the yellow spice, turmeric, has a number of different anti-cancer mechanisms for many different kinds of cancers⁶³⁻⁶⁵. It promotes death of cancer cells. In cell culture, it has been show to inhibit the Her2 pathway, among other important pathways in cancer⁶⁶. It is a potent anti-inflammatory, which is also important in cancer prevention. It will work best when taken with other herbal anti-inflammatories. Indian curries, which contain tumeric and ginger, are a wonderful way to get a combination of natural anti-inflammatories. Be sure to add the tumeric directly to the oil in order to maximize absorption.

15. GREEN TEA

Although it is not clear if green tea helps to prevent a first breast cancer, it has much less caffeine than coffee (see #15 below), and has anti-cancer as well as heart protective properties. Green tea “polyphenols” have been shown to decrease recurrence in Stage I and II cancers by 44%.⁶⁷ It is a proteasome inhibitor, which is involved in angiogenesis⁶⁷, and also inhibits Her2 expression in cell culture⁶⁸.

Some people may want to take green tea extract as a supplement. We recommend Life Extension’s Designs for Health EGCG, which has 1,000 mg green tea with 500 mg EGCG per capsule. Or, use Natura’s Botanical Treasures, which also has green tea extract, as well as curcumin and resveratrol. These two products do contain small amounts of caffeine. The best source of decaffeinated green tea extract is Life Extension’s Mega Green Tea Extract (decaffeinated) with 326.35 mg EGCG per capsule.

16. AVOID MORE THAN 100 MG CAFFEINE DAILY

The information on caffeine and coffee are mixed. On one hand, a high caffeine intake has been associated with a greater risk of hormone-negative tumors (more common in premenopausal women), and larger tumors at diagnosis.⁶⁹ On the other hand, high caffeine intakes have been associated with a very small decreased risk for postmenopausal breast cancers.⁷⁰ and a much larger (64%) decreased breast

cancer risk for women with BRCA-1 mutation.⁷¹ However, caffeine intake from all sources is linked with higher estrogen levels regardless of age, body mass index (BMI), caloric intake, smoking, and alcohol and cholesterol intake. Women who take 500+ mg of caffeine have nearly 70% more estrogen during the early follicular phase than women consuming no more than 100 mg of caffeine daily, or less than one cup of coffee.

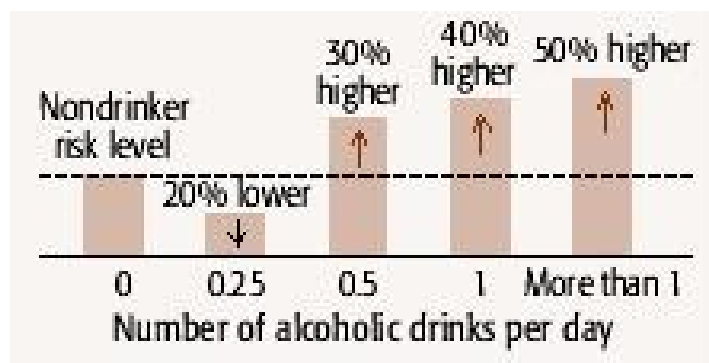
Eight ounces of green tea has only 20-35 mg of caffeine, while the same amount of brewed coffee has 60-120 mg, and a 2 oz. double espresso has 50-100 mg. One ounce of dark chocolate has 20 mg of caffeine.

17. INCREASE YOUR DIETARY INTAKE OF RESVERATROL

Resveratrol, which comes from red grape skins has antioxidant and anti-aromatase activity and has cancer prevention activity.^{72,73} Dietary sources include red grapes, peanuts with the skin, plums, raspberries, mulberries, cranberries, blueberries, and lignonberries. Wine has absorbable resveratrol, but even modest amounts of alcohol are associated with increased breast cancer risk (see # 16 below). Some people may want to take a resveratrol supplement (see under supplements below).

18. AVOID OR CUT BACK ON ALCOHOLIC BEVERAGES

The Nurses' Health Study found that drinking as little as half a drink a day increased a woman's breast cancer risk by 30%. The Women's Health Study found that each additional daily 10 mg of alcohol (approximately 1 glass of wine or beer or 1/3 serving of liquor) increases the risk of breast cancer by 7-9%.⁷⁴ The problem is multiplied if you are taking estrogen hormone replacement therapy. Alcohol may increase breast cancer risk through a variety of mechanisms.⁷⁵



Source: Nurses' Health Study

If you do have an alcoholic beverage, red wine will provide absorbable resveratrol, which has cardiovascular benefits, as well as possible anti-cancer benefits. Pinot Noir consistently has more resveratrol than other red wines, regardless of climate. Red wines from cold, humid climates (Canada, Bordeaux) have more resveratrol than wines from hot, dry climates. (Natural Medicines Comprehensive Database)

Taking additional folic acid appears to help counter the increased breast cancer risk from alcohol. However, in general, alcohol “robs” the body of nutrients, especially B-vitamins, by using them up and not providing any. Also, alcohol puts a burden on the liver and makes it more difficult to detoxify chemicals, including the body’s own hormones.

19. GET ADEQUATE, BUT NOT EXCESSIVE, IODINE

Iodine is needed for the maintenance of healthy breast tissue, as well as for the production of thyroid hormone. Use iodized salt when you use added salt (such as Hain’s Iodized Natural Sea Salt). Also

incorporate sea vegetables into your diet. Kombu (a seaweed from the genus *Laminaria*) is particularly rich in iodine. It is especially good in bean soups.

LIFESTYLE

20. EXERCISE

Research suggests that sedentary women are at higher risk for breast cancer than women who are physically active. Most studies have shown that higher exercise levels lower the risk of breast cancer by an average of 30%–40%. Even moderate activity reduces cancer risk (2 miles per day 3 times per week reduces breast cancer risk by 33%) Walking, yoga, tai chi are all good. (Many studies support this. Dr. Ann McTiernan is one expert and she has a book on exercise and breast cancer.)

21. AVOID SMOKING AND SECOND HAND SMOKE

Current smokers are 50% more likely to have breast cancer than never smokers. Exposure to 2nd hand smoke increases breast cancer risk by 60%. Smoking stimulates angiogenesis, which allows the cancer to develop its own blood supply to support its growth⁷⁶. Nicotine is also mutagenic, interferes with some cancer therapies, and promotes tumor growth⁷⁶⁻⁷⁹.

22. GET UNINTERRUPTED SLEEP

Light exposure at night increases risk of breast cancer. Women working the night shift have a 60% increased risk of breast cancer. (Karaska Neuroendocrine Letter 1999. 20(3-4) 139-144.) Melatonin in vitro inhibits proliferation of breast cancer cells.

23. AVOID EXPOSURE TO PESTICIDES AND OTHER HORMONE-DISRUPTING TOXINS

This includes avoiding plastic storage and water containers whenever possible as these can leach hormone-disrupting chemicals into the food. The worst offender is the hard polycarbonate bottles—use glass, stainless steel or the Sigg ceramic-lined aluminum instead. Don't use # 3, 6, or 7 plastics to store foods; stick with #4 for plastic baggies or better yet, use waxed-paper sandwich bags. Do not microwave in any plastic container. Avoid cosmetics with parabens.

24. DECREASE STRESS

New research shows that regular stress reduction actually changes the expression of the human body's genes that have to do with cancer risk. Each phase of the study indicated that the relaxation response alters the expression of genes involved in inflammation, programmed cell death, and the body's handling of free radicals (those molecules produced by normal metabolism that can damage cells and tissues if not properly neutralized). These are all mechanisms that involved in cancer initiation and progression.

Work on stress management with a daily relaxation practice, such as meditation, yoga, imagery, sequential relaxation, prayer, etc. Explore the stressors in your life and consider changes that would make your life more meaningful and less stressful.

25. SUPPORT AND CONNECTION

Mobilize, join or initiate a support group that will provide you connection, support and healing.

SUPPLEMENTS

1. FISH OIL

Two to 3 g/day of combined EPA/DHA, mercury free. EPA has an anti-inflammatory effect. EPA/DHA increases the ratio of 2-OH-estrone to 16-OH-estrone. It also helps to increase cell differentiation and induce apoptosis⁸⁰⁻⁸³.

Note: this needs to be 3 grams of EPA and DHA/day, not 3 grams of fish oil. You need to check the labels. Nordic Naturals, Thorne, Metagenics, Designs for Health, and Carlson's, and ProThera are all good brands. Concentrated oils are available as well, and can decrease the number of capsules you take to get the same amount of EPA/DHA. Cod liver oil is not the same as concentrated fish oil and is problematic because you will get excessive Vitamin A if you take enough to get 3 grams of fish oil.

Do not count on flaxseed oil for your EPA and DHA. Very little of the omega-3 fat in linseed oil is converted to EPA and DHA in the body. What conversion there is can be compromised by insulin resistance or other metabolic problems. A non-fish source of EPA and DHA is krill oil (these are shrimp-like crustaceans), while a vegan source of DHA comes from marine algae. However, the algae does not contain EPA and has much less DHA than fish oils (depending upon the concentration of DHA in the fish oil).

Notes on fish oil sources: ProThera's *Eicosamax* has no fishy taste and a great lemon flavor. It can be taken as capsules or as a liquid. It is super-concentrated so less needs to be taken to get adequate amounts of EPA and DHA. It also contains little to no fish protein and is tolerated by individuals who are allergic to fish. Thorne's *Omega Superb Lemon Berry* is not concentrated, but it has no discernable fishy taste and would work well in smoothies. To get EPA/DHA with GLA and Siberian buckthorn oil, use Natura's *Beyond Essential Fats*, a lemon-flavored liquid that is available through our office.

Carlson Labs' "*Very Finest Fish Oil*" and "*MedOmega*" Fish Oil are also popular among our patients. Very Finest Fish Oil is very economical, but is not concentrated like the *Eicosamax*, while their *MedOmega* is the equivalent of *Eicosamax*. Their *Carlson Elite Omega-3 Gems® Fish Oil Professional Strength* is concentrated and an excellent deal from vitacost.com.

Eicosamax both liquid and capsules is available through our office. *Omega Superb Lemon Berry* is available through EmersonEcologics.com. Carlson Labs and Nordic Naturals are available through Vitacost.com.

2. Vitamin D

Two new vitamin D studies using a sophisticated form of analysis called meta-analysis, concluded that adequate vitamin D levels could reduce breast cancer incidence by 2/3rds.

Vitamin D not only affect sbone integrity, but also affects neurological function, immune function and risk for cancer, especially breast, colon, ovary and prostate. **It is essential to test your level of Vitamin D 25-hydroxy to determine how much Vitamin D you need AND to test your serum calcium level to make sure that you do not have a rare condition that precludes the use of high dose vitamin D.** The optimal blood level is 45-50 ng/ml. Depending upon your level, you may take large amounts for several weeks to replenish your body's Vitamin D stores. If you are starting with sufficient Vitamin D, taking 1000-2000 units of Vitamin D3 is recommended depending your age, the time of year, and your sun exposure (without sunscreen).

3. CURCUMIN (TURMERIC)

Curcumin has a number of different anti-cancer mechanisms for many different kinds of cancers⁶³⁻⁶⁵. It promotes death of cancer cells. Cell studies show that it works synergistically with cisplatin to promote apoptosis in a variety of cancer cell types⁸⁴⁻⁸⁷. In cell culture, it has been show to inhibit the Her2 pathway, among other important pathways in cancer⁶⁶. Curcumin has also been shown to inhibit breast cancer stem cells.⁸⁸

Some individuals who have inflammatory conditions such as arthritis may want to take herbal anti-inflammatories as a supplement. Preparations include such as Natura's *Botanical Treasures* (which

contains a number of anticancer compounds), Metagenics *Inflavanoid Intensive Care*, or in medical foods, such as Metagenics *InflamX* and Thorne's *MediClear Plus*, which also contains resveratrol and green tea extracts (used to make smoothies, etc.). Life Extension is now making a *Super Bio Curcumin*, which has excellent absorption.

Curcumin will work best when combined with other herbal anti-inflammatories, such as green tea and resveratrol. Please check with Dr. Wright if you are interested in curcumin supplementation.

4. RESVERATROL

Resveratrol, which comes from red grape skins has antioxidant and anti-aromatase activity and has cancer prevention activity^{72,73}. It helps reduce the production of pro-carcinogenic estrogen metabolites that can be found in breast tissue. It also may help promote cancer cell death^{89,90}, and in an animal studies has been shown to increase the effectiveness of cisplatin and doxorubicin against human ovarian, uterine, and breast cancer cells^{89,91}. Resveratrol is currently being seriously studied as an anti-aging compound. Resveratrol is not absorbed well by the GI tract and is most effective when combined with other herbal phytonutrients such as curcumin. Natura's *Botanical Treasures* contains considerable amounts of resveratrol. Different companies are working on developing more absorbable forms of resveratrol. Please check with Dr. Wright if you are interested in resveratrol supplementation.

5. COENZYME Q 10

- Take a 100 mg softgel daily. Since fat helps to improve the absorption of CoQ-10, do not take a dry form of Coenzyme Q10. (J Am Cardiol, March 1999, 33(3):897-9)
- Take with a natural (oil-based) Vitamin E.
- Lower levels of Coenzyme Q10 in women taking statins associated with increased cancer risk. (Sinatra. J Am Col Cardiology. March 1999, 33(7) 897-9. If you are taking a statin, have your serum CoQ10 level checked.

6. PROBIOTICS

Lactobacillus and bifidobacterium with at least 10 billion live organisms. Or use organic nonfat plain yogurt made with Lactobacillus and Bifidobacterium.⁹² We recommend Klaire Labs TherBiotic Complete (1/8th tsp daily supplies 50 billion live organisms).

7. MULTIVITAMIN

Look for a total (including daily multivitamin) dose of :

- VITAMIN E, mixed tocopherols, 100-400IU/day
- SELENIUM, 100 to 200 mcg/day
- Blend of CAROTENOIDS (preferably to only beta-carotene)
- METHYLFOLATE OR FOLINIC ACID: 400 1,000 mcg/daily depending upon your needs. If using a vitamin with synthetic folic acid, do not use more than 400 mcg daily.
- Copper-free or at least a Zinc to Copper ration of 15 parts zinc to 1 part copper
- Iron-free if you are no longer menstruating
- One example of an appropriate vitamin is Designs for Health *Twice Daily Multivitamin*

8. CHLORELLA

Chlorella is a possible supplement for those who are or have been exposed to endocrine disrupting chemicals such as pesticides and bisphenyl-A. Although chlorella does not live up to the promise of being able to detoxify heavy metals, such as mercury, it can help the body to detoxify organic pollutants.

There are several good brands, including Sun Chlorella, and either Jarrow or Source Naturals Yaeyama Chlorella. Chlorella should be grown in a pristine or controlled environment, be regularly tested for contaminants, and have a broken cell wall to increase absorption. Chlorella is high in iron (4-5 grams per serving), which can increase oxidative stress, so your intake of iron supplements must be adjusted accordingly.

Testing for chlorinated pesticides, PCBs, bisphenyl A, phalates, and parabens are available through Genova/Metametrix and can be ordered by Dr. Albert.

9. CALCIUM D-GLUCURATE.

Use 500mg two times/day. Inhibits beta glucuronidase, allowing less estrogen to be reabsorbed. Use this only if directed by your health professional.

10. I3C or DIM.

Use only if directed by your health professional. This helps to change estrogen metabolism. It is important to be tested before and after using this supplement to see if it is having the desired effect on estrogen metabolism.

11. ALPHA LIPOIC ACID (ALA) OR N-ACETYL CYSTEINE (NAC)

These help the body process toxins, and also help the body to process estrogen metabolites. The level of supplementation can be guided by testing (for example, estrogen metabolites, comprehensive detoxification, Spectracell, etc.)

12. MELATONIN

Use only if directed by your health professional. Useful in shiftwork, jet lag, and for sleep difficulties. Helps to prevent estrogen byproducts from becoming genotoxic.

13. IODINE

Iodine helps to prevent breast fibrosis and may help to decrease breast cancer.^{93,94} However, supplementation requires a particular type of iodine. Please see Dr. Albert for specifics.

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