



MammAlive™

HEALTHY BREAST SOLUTIONS

MammAlive™ Foundation *presents*

Dietary and Nutritional Strategies for Women with Breast Cancer and for Prevention

Author: Sat Dharam Kaur ND

Learning Objectives:

1. Understand the foods that protect and those that potentially harm breast health
2. Know which types of foods to avoid to maintain breast health
3. Know the protein content of foods and how much to recommend
4. Become familiar with the phytoestrogen content of foods
5. Become familiar with The Healthy Breast Diet
6. Identify the vitamins and minerals protective towards breast health
7. Identify other nutrients that help to prevent breast cancer
8. Know the nutritional strategies that help to prevent breast cancer
9. Become familiar with a supplement regimen that can be used to prevent breast cancer or assist recovery

See www.mammalive.net for more information about the **Healthy Breast Program** and future courses.

Call 519 372-9212 or email satdharamkaur@gmail.com for more information

Dietary Guidelines for Breast Health

Foods to Avoid:

Minimize or Avoid Meat

- do not consume red meat, due to its high saturated fat content, presence of pesticides, organochlorines, antibiotics and hormones in the meat, and slow transit time, which allows for more fermentation and putrefaction in the digestive tract
- a high meat diet promotes the growth of a specific intestinal bacteria that causes more reabsorption of estrogen through the intestinal wall
- the cooking of meat generates a class of chemicals called heterocyclic amines, which are both carcinogenic and estrogenic, and are implicated in the initiation and progression of breast cancer,ⁱ
- being higher on the food chain, meat accumulates toxins such as PCBs and dioxin, which are known carcinogens and hormone disruptors linked with breast cancer.ⁱⁱ
- approximately 90-98% of human exposure to dioxins and PCBs comes from our diet, with meat, fish and dairy being the predominant sources.ⁱⁱⁱ
- a high meat diet promotes the growth of a specific intestinal bacteria that causes more reabsorption of estrogen through the intestinal wall.
- meat eaters will therefore have higher estrogen levels than vegetarians, which can make them more susceptible to breast cancer.^{iv}
- use instead tofu, beans, sea vegetables and a few nuts and seeds as protein sources.
- higher meat consumption increases IGF-1 levels

Avoid Fish

- although purified fish oils have anti-inflammatory and anti-cancer benefits, fish themselves may contain mercury, arsenic, cadmium, PCBs, dioxins and PBDEs, potentially increasing cancer risk.^v
- pregnant or nursing women who consume fish may be transferring a higher level of hormone disrupting chemicals to their children, making them more susceptible to hormonally based cancers later in life.
- in contrast, docosahexaenoic acid (DHA) and eicosapentaenoic acid (EPA) inhibit a variety of cancers by increasing apoptosis^{vi} and modulating the activity of the pro-inflammatory TNF family cytokines.^{vii} Purified fish oils, therefore, can be taken to inhibit cancer growth.

Avoid or Minimize Dairy

- studies on dairy and cancer are mixed, with many studies showing no relationship between dairy intake and cancer risk. However, some studies suggest increased breast, prostate, pancreatic^{viii} and hepatocellular^{ix} cancer risk with consumption of dairy fat.
- one of the mechanisms that may link dairy fat to cancer is that high fat dairy can increase insulin growth factor 1 (IGF-1) levels.^{x xi} IGF-1, a hormone produced in the liver, increases risk of both breast cancer and prostate cancer.^{xii}
- one study showed that premenopausal women with high levels of IGF-1 in their blood were seven times more likely to get breast cancer than women with low levels,^{xiii} while men with the highest levels of IGF-1 were four times as likely to develop prostate cancer as men with the lowest levels.^{xiv}
- a 1995 study on rats published in the Journal of Endocrinology found that casein, a protein found in milk, slows down the breakdown of IGF-1, allowing it to circulate in blood at higher levels for longer periods of time.^{xv}

- A large case-control study in France in 1986 found that women who ate cheese regularly had 50% more risk than women who didn't eat cheese and those who drank milk regularly had 80% higher risk.^{xvi}

Avoid Sweets – sugar, honey, maple syrup, fruit juice, soft drinks etc.

- cancer cells derive their energy from sugar, and insulin and IGF-1 strongly stimulate cancer growth.
- there is a correlation between high intake of sweets and localized breast cancer in young women.^{xvii}
A low sugar diet and avoidance of refined carbohydrates with a high glycemic index may be protective. Choose carbohydrates that have a low glycemic index, such as most legumes, pearl barley, quinoa and green vegetables.
- sweets will also promote an overgrowth of unwanted organisms in the intestinal tract, such as Candida and parasites. Cancer patients are prone to candidiasis when their immune systems have been suppressed during and after chemotherapy and radiation^{xviii}, or after antibiotic use. Care should be taken to identify patients with Candida overgrowth and recommend a diet that discourages fungal growth.
- when we consume sweets a type of white blood cell called the phagocyte decreases its numbers within 30 minutes and this decline lasts for over 5 hours, with a 50% reduction in phagocytes approximately 2 hours after ingestion. This leads to a poorly functioning immune system.
- this effect occurs after glucose, fructose, sucrose, honey and orange juice. Sweets will also promote an overgrowth of unwanted organisms in the intestinal tract, such as yeast and parasites
- after drinking soft drinks, there is a fast and dramatic increase in both glucose and insulin levels within the first hour. This response is more pronounced when body mass is lower, i.e. in children.

Avoid Alcohol

- alcohol use causes individuals to be more susceptible to cancer of the liver, colon, oral cavity, esophagus, rectum, pancreas and breast.^{xix xx}
- In one study the breast cancer risk increase was 250 percent for women who drank two or more drinks daily.^{xxi} Women who have even one drink a day have an 11% higher risk of breast cancer.^{xxii} Alcohol may interfere with the liver's ability to detoxify both chemicals and excess estrogen in the body.
- Consumption of alcohol increases the production of insulin-like growth factors by the liver, which promote the development and/or growth of breast cancer.

Minimize Salt

- Max Gerson believed that salt and excess sodium in general were a major cause of cancer. He theorized that chronic disease begins with a loss of potassium from cells followed by a flow of sodium and water into the cells
- a high potassium diet is beneficial. Potassium is a highly alkaline mineral that reduces acidity in the body. High potassium foods include sea vegetables, olives, almonds, prunes, figs, raisins, apples, apple cider vinegar, bananas, potatoes, legumes, beets, green leafy vegetables, sunflower seeds, yams, winter squash, pumpkin, and mint leaves.

Coffee

- coffee is an adrenal stimulant that causes a short-lived output of adrenal hormones followed by a depletion in them, creating the desire for another coffee
- it is high in chemicals that have been used both in the growing and the processing of it

- these burden the liver so that it is less able to detoxify both internally generated and external toxins.
- use Greens Plus, chai tea or green tea or an adrenal tonic to help kick the coffee addiction.

What to Eat:

Eat organic

- free of pesticides, herbicides, organochlorines
- higher mineral content
- supports global ecology
- breast cancer can also be linked to pesticide use.^{xxiii} An increase risk of breast cancer was specifically found with high exposure to triazine herbicides, including atrazine.^{xxiv}
- one way to decrease exposure to pesticides is to grow more of our own food in backyard or community gardens, or participate in a local food co-op.
- the Environmental Working Group in the US analyzed pesticide residues of 48 different fruits and vegetables and ranked them as most or least contaminated. The following chart is a guideline to understanding which foods are most contaminated and should be purchased organically grown, and which have fewer pesticides and are safer to consume when not organically grown.^{xxv}

Most Contaminated Foods	Least Contaminated Foods
1. apples	1. avocado
2. strawberries	2. sweet corn
3. grapes	3. pineapple
4. celery	4. cabbage
5. peaches	5. frozen sweet peas
6. spinach	6. onions
7. sweet bell peppers	7. asparagus
8. imported nectarines	8. mango
9. cucumbers	9. papaya
10. cherry tomatoes	10. kiwi
11. snap peas	11. eggplant
12. potatoes	12. grapefruit
13. hot peppers	13. canteloupe
14. domestic blueberries	14. cauliflower
15. lettuce	15. sweet potato

Be primarily vegetarian

- more phytochemicals, antioxidants, vitamins, minerals, fiber
- 6-9 servings fruits and vegetables daily
- eat lower on the food chain – less cumulative exposure to env. chemicals
- may delay puberty
- supports global ecology
- a vegetarian diet includes more fibre (which lowers estrogen, insulin and IGF-1), is more alkaline, and keeps estrogen and IGF-I levels lower. It also decreases inflammation.
- a 2014 study showed that individuals between 50-65 years of age who had a high animal protein intake had a 75% increase in overall mortality and a 4-fold increase in cancer death risk during the following 18 years.^{xxvi}

- another study found that a diet containing 20% plant protein inhibited tumor weight by 37% as compared to a 20% animal protein diet.^{xxvii} An intake of 0.8 grams of vegetarian protein per kg of body weight (or approximately 35-60 grams) is adequate to meet protein needs.^{xxviii} Include 10-20 grams of organic soy protein in total protein intake to prevent breast^{xxix} cancer, as long as individuals are not allergic to it.
- Be sure to have 35-60 grams of vegetarian protein daily to meet your protein needs.

Food	Protein Content (Grams)	Quantity Required
Miso	5.9	½ cup
Tofu, silken	8.1	½ cup
Tofu, firm	15.6	½ cup
Soybeans, boiled	16.6	½ cup
Soybeans, dry-roasted	39.6	½ cup
Soy milk	5.6	1 cup
Tempeh	19.0	½ cup
Soy protein powder	58.1	1 ounce
Kidney beans	15	1 cup, cooked
Lentils	16	1 cup, cooked
Split peas	17	1 cup, cooked
Chick peas	14.5	1 cup, cooked
Almond butter	5	2 tbsp
Almonds	2.8	12
Sunflower seeds	6.5	1 oz
Pumpkin seeds	7	1 oz (142 seeds)
Sesame seed butter	2.6	1 tbsp
Hemp seed	5	1 tbsp
Flaxseed	2.5	1 tbsp
Quinoa	8.1	1 cup

Consume 40 grams of vegetarian protein per day

- protein should not be excessive to prevent cancer in general, and needs to be combined with quality oils for optimum health.
- excess animal protein will increase IGF-1 levels
- the average adult requires approximately 30 to 60 grams per day (40 grams ideal)
- adequate vegetarian protein would include 2 or 3 servings a day where one serving equals 1 cup of cooked legumes, 1/2 cup tofu, 2 tbsp. nut butter or 3 tbsp. of nuts or seeds. Legumes include kidney beans, soybeans, chickpeas, split peas and lentils.

Use Organic Soy, which Contains Genistein.

- genistein (found in soy) influences enzymes that regulate cell growth and division and has anti-oxidant properties.
- it induces apoptosis, or programmed cell death, which is a form of suicide by damaged or cancerous breast cancer^{xxx} cells. It inhibits the formation of blood vessels that feed cancerous tumors (angiogenesis), helping to starve tumors of their blood supply.^{xxxi} A genistein supplemented diet in studies on mice with breast tumors was found to reduce lung metastases 10-fold^{xxxii}
- soy isoflavones decrease the invasiveness (adhesion and motility) of breast cancer cells^{xxxiii} and regulate genes and cellular signaling involved with tumor initiation, promotion and progression.^{xxxiv} A diet high in soy may also reduce IGF-1 levels,^{xxxv} inhibiting cancer growth.
- use 10-15 grams of organic soy protein daily or several times a week. Avoid if you have a soy allergy.

- a diet high in soy may reduce IGF-1 levels^{xxxvi}
- each day eat either ½ cups firm tofu or tempeh, 1 ½ cups soymilk, ½ cup edamame, ¼ cup soy nuts, or some combination of these, aiming for 10-20 grams of soy protein daily. Use organic, non-GMO products. Include miso in your diet several times a week, perhaps as miso soup. Have soy with seaweed to protect the thyroid. Avoid soy if it is an allergy for you.

Genistein and Daidzen in Foods

- Genistein and daidzen are found in the following foods in decreasing amounts: tofu, soymilk, miso, red clover sprouts, fava beans, Indian potato, yellow peas, pinto beans, green lentils, garbanzo beans, black turtle beans, mung beans and mung bean sprouts, adzuki beans, bush beans, navy beans, baby lima beans, black-eyed peas and kidney beans. They are generally found in higher amounts in the sprouts and roots of legumes (particularly mung bean and red clover), being more concentrated in the root.
- short-term exposure to dietary isoflavones found in soy is especially beneficial for newborns and girls who have not yet reached puberty.
- early exposure may increase the proportion of differentiated breast cells and decrease risk of breast cancer caused by carcinogens later in life. Thus the diet of Japanese and Chinese women may confer part of its protective effect early in life
- introduce children to moderate but not extreme amounts of soy products early in life with higher amounts before and through puberty
- A study done in China (*Dec. 9, 2009 Journal of the American Medical Association*) examined the safety of soy food consumption among 5,042 breast cancer survivors, aged 20 to 75. Women were recruited into the study six months after a breast cancer diagnosis. After four years, women with the highest intake of soy protein had a 29 per cent lower risk of death and were 32 per cent less likely to have a breast cancer recurrence compared with women with the lowest intake. Soy was protective for women with either early or late stage breast cancer and in women with estrogen-receptor (ER) positive and ER negative breast cancer. Soy intake enhanced the effectiveness of tamoxifen. Women who consumed the most soy and did not take tamoxifen had a lower risk of cancer recurrence and death than tamoxifen users with low soy intakes. In effect, soy food intake performed better than tamoxifen in preventing recurrence! The women who consumed the most soy, whether they used tamoxifen or not, had a 35% reduction in recurrence.
- A second study called the Life After Cancer Epidemiology (LACE) study, published in November 2009, followed 1,954 northern California early stage breast cancer survivors for six years and found that postmenopausal women with a high soy intake – compared with none – had a lower risk of their cancer returning. Among postmenopausal women treated with tamoxifen, those who consumed the most soy were 60 per cent less likely to have their breast cancer recur compared with women with the lowest intakes.
- A daily intake of 11 grams of soy protein offered the most benefit, an amount found in about 1 1/2 cups of soy milk, one soy burger, 1/2 cup of edamame (young green soy beans) or 1/2 cup of tofu. Higher intakes did not offer extra protection.

Use other foods that are high in phytoestrogens, which are primarily beans and sprouts, and seeds.

- These bind to the estrogen receptor and are 100-1000 times weaker than the body's estrogen. They block the action of estrogen in breast cells, acting in a similar way to the drug, Tamoxifen.

Consume at least 2 Tbsp of freshly ground flaxseed daily. Flaxseeds and other foods contain lignans

- Flaxseeds and other foods contain lignans, which have anti-viral, anti-bacterial and anti-fungal properties. Flaxseeds inhibit the growth of breast^{xxxvii} and prostate^{xxxviii} cancer
- lignans contain two phytoestrogens, known as secoisolariciresinol (SECO) and matairesinol
- these are converted by intestinal bacteria to weak estrogens (enterodiol and enterolactone)
- vegetarians excrete more lignans than non-vegetarians and vegetarian women who do not consume dairy or eggs excrete the most
- ninety-five percent of the lignans are present in the fiber of the seeds while less than five percent is present in flaxseed oil.
- Lilian Thompson has found that women who used flaxseeds in their diets between the time of diagnosis and the time of surgery to remove a breast tumor were able to decrease their tumor size before the surgery
- . In studies on mice, a diet containing 10% flaxseed reduced breast cancer tumor cell proliferation and increased apoptosis, causing decreased tumor size by 74% in the presence of high estradiol levels and 22% when estradiol levels were low. It increased the inhibitory ability of Tamoxifen at both low and high estradiol levels^{xxxix}
- flaxseed supplementation increases the C2/16 hydroxyestrone ratio (a good thing) in studies on premenopausal women (*Cancer Epidemiol Biomarkers Prev, 2000 Jul;9(7):719-25*)
- gestation and lactation exposure to flaxseed in rats caused changes in breast tissue that reduced breast cancer risk later in life (*Carcinogenesis 1999 Sep;20(9):1831-5*)
- in studies on mice, a diet containing 10% flaxseed reduced breast cancer tumor cell proliferation and increased apoptosis, causing decreased tumor size by 74% in the presence of high estradiol levels and 22% when estradiol levels were low. It increased the inhibitory ability of Tamoxifen at both low and high estradiol levels (*Clin Cancer Res 2004 Nov 15;10(22):7703-11*)
- use a small electric coffee grinder and add them ground to pancakes, muffins, cookies, breads, cereals or even sprinkled in salad. Grind them daily so that the oil does not become rancid with storage. Freshly ground flaxseeds should be consumed within 15 minutes of grinding. Aim for two to four tablespoons (25-50 g) daily. (If you have more than 2 tbsp. daily, you may need extra vitamin B6). They can also be mixed with juice.
- Ki-67 is a marker for breast cancer proliferation. The 5-year overall survival rate is about 86.7 % (89.3 %) in patients with a Ki-67 value ≤15 % compared to 75.8 % (82.8 %) in patients with a Ki-67 value >45 %. Flaxseed intake decreases Ki-67, decreases breast density, decreases IGF-1 and circulating estradiol^{xl}

The Fabulous Five Phytoestrogens

Focus on these "fab five" to get your fix of phytoestrogens:

FABULOUS FIVE

Flaxseeds, freshly ground
Tofu and soy products
Raw pumpkin seeds
Clover sprouts
Mung bean sprouts

SUGGESTED AMOUNTS

2-4 tablespoons daily
1/2 cup tofu or 1 1/2 cups soy milk daily
1-2 tablespoons daily
3 or more cups weekly
3 or more cups weekly

Consume at least 8 servings of fruits and vegetables daily
Cancer Fighting Phytochemicals Found in Fruits and Vegetables

Phytochemical	Effect	Food Sources
Allyl sulfides	Increases liver enzymes to detoxify carcinogens.	garlic, onions, leeks
Capsaicin	Prevents carcinogens from binding to DNA.	chili peppers
Carotenoids	Act as antioxidants that neutralize free radicals, enhance immunity, and high intake is associated with low cancer rates. They promote cell differentiation	parsley, carrots, spinach, kale, winter squash, apricots, cantaloupe, sweet potatoes, seaweed
Polyphenols	Act as antioxidants; reduce damaging effects of nitrosamines. Kills human cancer cells.	broccoli, carrots, green tea, cucumbers, squash, mint, basil, citrus
Flavonoids	Prevents the attachment of cancer-causing hormones to cells by blocking receptor sites.	most fruits and vegetables, including parsley, carrots, citrus, broccoli, cabbage, cucumbers, squash, yams, eggplant, peppers, berries
Curcumin	Assists the liver in detoxifying carcinogens. Arrests cancer cells.	turmeric
Ellagic acid	Neutralizes carcinogens in the liver, antioxidant, inhibits cancer cell divisions	red raspberries, walnut skin
Punicic acid	Inactivates breast cancer cells	pomegranate seed and oil
Ursolic acid	Inactivates breast cancer cells	loquat leaf, Greek sage, rosemary
Eucalyptol	Inhibits breast cancer cell growth	rosemary, eucalyptus essential oil
Isoflavones (genistein and daidzen)	Bind to the estrogen receptor so that harmful estrogens can't bind; block the formation of blood vessels to tumors, inhibit enzymes that might cause cancer; inhibits activation of breast cancer genes.	soybeans, tofu, miso, lentils, dried beans, split peas, garbanzo beans, green beans, green peas, mung bean sprouts, red clover sprouts
Indoles	Induce protective enzymes, stimulate C2 estrogen production. Decreases the estrogen that initiates breast cancer.	raw cabbage, broccoli, Brussels sprouts, kale, cauliflower, bok choy, kohlrabi, mustard, turnips
Isothiocyanates	Prevents DNA damage; blocks the production of tumors induced by environmental chemicals, act as antioxidants, assist liver detoxification.	mustard, horseradish, radishes, turnips, cabbage, broccoli, cauliflower, Brussels sprouts, kale, bok choy, watercress, garden sorrel
Limonoids	Induce protective enzymes in liver and intestines that fight cancer.	citrus fruit rind, essential oils of lemon, orange, celery, lemongrass
Linolenic Acid	Regulates production of prostaglandins in cells.	flaxseeds and flaxseed oil

Lycopene	Protects from cell damage.	tomatoes, red grapefruit, guava
Lutein	Protects against cell damage.	spinach, kiwi, tomato, grapes
Monoterpenes	Antioxidant properties, induce protective enzymes, inhibit cholesterol production in tumors, stimulate the destruction of breast cancer cells, inhibit growth of cancer cells.	cherries, lavender, parsley, yams, carrots, broccoli, cabbage, basil cucumbers, peppers, squash, , eggplant, mint, tomatoes, grapefruit
Phenolic Acids	Block the effects of free radicals; inhibit the formation of nitrosamine, a carcinogen.	berries, broccoli, grapes, citrus, parsley, peppers, soy, squash, tomatoes, grains
Plant Sterols (beta-sitosterol)	Prevent cells from becoming cancerous and lower fat levels in the body.	broccoli, cabbage, soy, peppers, whole grains
Protease Inhibitors	Block the activity of enzymes involved in the growth of tumors.	beans and soy products
Quercetin	Slows down cell division	onions, apples, green cabbage
Quinones	Neutralize carcinogens.	rosemary, pau d'arco tea
Sulforaphane	Increases the ability of the liver's detoxifying enzymes to remove carcinogens. Is an antioxidant.	broccoli sprouts, broccoli, cauliflower, Brussels sprouts

50-80% Raw food

- more enzyme activity to assist digestion and detoxification
- preserves vitamins

Brassicas daily

- cabbage, kale, broccoli, cauliflower, Brussels sprouts, kohlrabi, turnip, rutabaga, garden sorrel, radish, watercress, collards
- indole-3-carbinol at 300 mg. daily doubles C2 hydroxyestrone (protective estrogen) and decreases C16 hydroxyestrone; found in 1/3 raw cabbage. It also decreases the likelihood of metastases and causes cell death in breast cancer cells. Indole-3-carbinol decreases the likelihood of metastases in breast cancer^{xli} cells.
- thiols improve liver detox; isothiocyanates help prevent DNA damage
- broccoli sprouts high in sulforaphane – improves liver detox; protects from environmental chemicals; inhibit growth of breast cancer stem cells
- at least 1/2 cup daily of brassicas; coleslaw 3x a week
- caution – may interfere with thyroid function and cause a rise in TSH unless use seaweed as well

Use sprouts and cereal grasses

- high in vitamins, minerals, enzymes
- make body more alkaline (cancer doesn't thrive)
- contain phytoestrogens (clover, mung bean, soybean, yellow pea, green lentil, chick pea, fenugreek, adzuki bean) in much higher amounts than the beans
- Ann Wigmore (Hippocrates Health Centre) had patients eating 6 cups of sprouts daily

Benefits of broccoli sprouts

- sulforaphane content– 5 grams of sprouts equal to 50 grams broccoli
- sulforaphane improves liver phase 2 detoxification and protects from environmental chemicals.
- sulforaphane inhibits growth of breast cancer stem cells.^{xlii}
- it strongly inhibits breast cancer cell viability and proliferation^{xliii}

Use Watercress

- watercress contains sulforaphane and helps to suppress the invasiveness of breast cancer cells^{xliv} and causes apoptosis (cell death) in breast cancer cells^{xlv}

Consume garlic, onions and leeks

- garlic helps prevent the initiation, promotion and recurrence of many cancers, including breast cancer.^{xlvi}
- garlic is high in the trace mineral selenium, which inhibit cancer growth.^{xlvii}
- garlic's antibacterial, antifungal and anti-viral properties may deter cancers related to infectious organisms (H. pylori in stomach cancer; HPV in cervical cancer).
- the garlic family contains sulphur-bearing amino acids and allyl sulfides, which help with liver detoxification.

Use Sea Vegetables Daily

- sea vegetables include arame, nori, hijiki, kelp, dulse, wakame, kombu and mekabu.
- they are rich in minerals and confer increased alkalinity to the body.
- sea vegetables are high in iodine, which suppresses the development and size of both benign and malignant tumors.^{xlviii}
- the high consumption of seaweed in Japan has been associated with their low breast cancer incidence. Studies on rats show that kelp inhibits the binding of estradiol to alpha and beta estrogen receptors and reduces serum estradiol levels.^{xlix}
- mekabu causes apoptosis in breast cancer cells.ⁱ Brown seaweeds have anti-inflammatory, anti-microbial, anti-viral and anti-tumoral properties.ⁱⁱ
- In addition, brown seaweeds can help to protect us from radiation toxicity, as they contain sodium alginate, which binds to radioactive molecules so they can be excreted.ⁱⁱⁱ

Use Dandelion

- history of use in prevention and treatment of breast cancer
- decreases estrogen levels through assisting liver function
- promotes bile flow which improves liver detoxification
- reduces lymphatic congestion
- stimulates stomach acid to improve digestion
- high in vitamin A and minerals

Fresh vegetable juices

- supply vitamins, minerals, phytochemicals
- Gerson clinic gives patients 13 glasses of organic fresh vegetable juices daily (one every hour)
- carrot, beet, cabbage the staple for breast cancer; can add kale, parsley, watercress, asparagus, tomato, bok choy, apple, ginger, garlic, sprouts, seaweed

- improves detoxification; need to use bowel cleansers along with juices to assist elimination
- keep body alkaline

Lycopene - tomatoes, guava, watermelon, grapefruit, rosehip

- Lycopene is a form of carotene and a good antioxidant, reducing susceptibility to ovarian,^{liii} prostate,^{liv} breast,^{lv} cervical, oral and esophageal cancer. It gives the red color to fruits and vegetables.
- tomatoes are its highest source, comprising 80% of dietary lycopene. Lycopene is 5x more bioavailable when tomatoes are cooked, and olive oil improves its absorption.
- benefits from 2 glasses of tomato juice daily
- caution with joint pain, tomato sensitivity

Citrus juices and peel – flavonoids and limonene

- citrus juices contain flavonoids that have been found to inhibit the growth and proliferation of breast cancer^{lvi}
- Citrus contains another phytochemical called limonene that also inhibits breast cancer. Limonene is an oil that assists the liver in removing carcinogens and nourishes the production of digestive enzymes
- it is found in highest amounts in the peels of citrus fruit, with the juice containing lesser amounts
- limonene is also found in dill, caraway, and mint. Animal studies have shown that limonene can prevent breast cancer. Tumors became smaller and the number of new tumors was reduced by 50 percent when animals were fed a diet containing 10% d-limonene. A phytochemical closely related to limonene is perillyl alcohol, which is over five times stronger than limonene in its action on breast tumors. It is found in high amounts in the essential oil of lavender and in cherries.

Flaxseed Oil Inhibits Breast and Colon Cancer

- Flaxseed oil improved the effectiveness of Herceptin on breast cancer cells when used with it in studies on mice.^{lvii} Flaxseed oil reduced breast cancer tumor size by 33%, tumor cell proliferation by 38%, and increased cell death by 110% when added to the diet in studies on mice.^{lviii} Flaxseed oil makes Tamoxifen more effective in reducing the growth of ER+ breast tumors.^{lix} In studies on rats, colon cancer is inhibited by flaxseed oil.^{lx}
- use 2 Tbsp of unheated flaxseed oil daily as part of your diet. Keep refrigerated.

Olive Oil is Protective

- Olive oil has anti-inflammatory and anti-cancer effects.^{lxi} Olive oil contains oleic acid (omega 9), which is anti-HER2, and slows growth of HER2 driven breast cancer.^{lxii} When cooking with olive oil, add a small amount of water to the pan first, then add the olive oil, so that its temperature is not higher than that of boiling water.
- use olive oil and garlic liberally in salad dressing

Use foods to aid Glycemic Control

- elevated blood sugar and insulin resistance encourage the growth of many forms of cancer, including breast and prostate. Along with maintaining a low sugar, low glycemic diet, foods that can be added to the diet to regulate blood sugar are listed below.

- add cinnamon, berries, chamomile tea, garlic, onions, leeks, chives, parsley, avocado, olive oil, flaxseed, oat bran, psyllium, lemon and prickly pear cactus^{lxiii} to your diet to regulate blood sugar levels

Fiber

- there are two types of fiber – soluble and insoluble. We need both.
- all fiber improves elimination, decreases a tendency to constipation, helps to eliminate toxins through the bowel, maintains the health of the intestinal flora (bacteria)
- wheat bran and psyllium have been found to decrease the levels of estradiol and estrone circulating in the blood when used daily
- consume wheat bran and psyllium regularly and aim for 45 grams of fiber daily.
- consume 1-2 cups of beans daily, for their fiber and phytoestrogen content. Beans also contain phytic acid, a cancer inhibitor, and are usually high in potassium, an alkaline mineral. Particularly beneficial beans are adzuki and mung.

Use Low Sodium/High Potassium Foods

- sodium is present in the extracellular fluid while potassium is found inside each of our cells. When one is low the other will be high.
- if sodium levels are high the body's cells swell and trap toxins.
- Gerson counseled his patients to restrict salt so that there would be less fluid retention and fewer toxins in the body generally, and supplemented them with potassium.
- potassium preserves alkalinity of the body fluids and encourages the kidneys to eliminate toxic waste products.
- excess use of salt will deplete potassium.
- foods with the best low sodium/high potassium ratios are: navy beans, caraway seeds, dark cherries, dried apricots, lentils, walnuts, oranges, almonds, apple, avocado, peaches, banana, grapefruit, pineapple, potatoes, soybeans, squash, tomatoes, sage, mint and apple cider vinegar
- aim for 3000 mg day of potassium which can be accomplished with several glasses of carrot juice daily, adzuki beans, fruits and vegetables

Include Shitake Mushrooms

- have traditionally been used to treat cancer, rheumatoid arthritis, poor circulation, parasites, lack of stamina, and cerebral hemorrhage.
- Michio Kushi recommends shitake mushrooms as a regular part of a macrobiotic diet and undoubtedly they account for part of the success that some macrobiotic practitioners have had in reversing cancer.
- Lentinan, made from shitake mushrooms, increases numbers of macrophages, T-killer cells and T-helper cells and prolongs the lives of some cancer patients
- An extract of shitake has demonstrated ability to inhibit breast cancer in women. When mice with breast cancer were given shitake extracts that composed 20% of their feed, there was a 78.6 tumor inhibition rate
- consume 3-4 mushrooms a day for a month at a time, taking a break for a week and then include them in your diets again.

Use Turmeric Liberally

- turmeric has antioxidant, anti-tumor and anti-inflammatory activity
- it stimulates bile production in the liver, improves the ability of liver enzymes to detoxify, relieves intestinal gas, is cleansing to the blood and skin and may be helpful in treating epilepsy and arthritis.
- it has a cooling effect and breaks up stagnation in the liver.
- curcumin, the main active ingredient in turmeric, is thought to prevent the formation of a blood supply to cancerous tumors so that they aren't able to grow
- curcumin reduces the growth of both hormone-dependent and hormone-independent breast cancer cells, as well as cells that were resistant to chemotherapy
- curcumin is helpful in protecting breast cells from the effects of cancer-inducing pesticides such as chlordane and endosulfan. There is a synergistic estrogenic effect arising from the use of a combination of pesticides, sometimes causing them to be a thousand times more toxic than if used individually.
- curcumin and genistein (derived from soy), when used together, were able to completely inhibit cell growth caused by the mixture of pesticides or estradiol
- have one teaspoon of turmeric powder daily, or supplement with curcumin.

Grow and use Greek Sage (*Salvia triloba*) as tea or add to food

- contains the highest amount of ursolic acid (next highest are oleander, rosemary, periwinkle, lavender, winter savory, thyme)
- ursolic acid is antimicrobial, anti-tumor, anti-inflammatory
- inhibits growth of *Candida*, staphylococci, Epstein-Barr virus
- active against breast cancer Arch Pharm Res. 2011 Aug;34(8):1363-72. Epub 2011 Sep 11
- you can purchase the plants at Richter's in Goodwood, Ontario

Use Rosemary in tea and cooking

- Rosemary contains the essential oil eucalyptol, which helps to kill *Candida albicans*, bacteria and worms; it also contains ursolic acid which helps to kill breast cancer cells
- Rosemary stimulates digestion, promotes bile flow, and cleanses the liver and kidneys.
- Rosemary contains a phytochemical called a quinone that acts to neutralize carcinogens.
- an extract of rosemary leaves increased the 2-hydroxylation of estradiol and estrone by 150% in mice to form more of the "good" C-2 estrogen and decreased the formation of the "bad" C-16 estrogen by 50%. It also increased the linking of estradiol and estrone to form the glucuronide complex in the liver, allowing estrogen to be eliminated more effectively

Add Goji Berries to salads, cereals, snacks

- regulates estrogen metabolism
- inhibits growth of breast cancer cells dependent on estrogen^{lxiv}
- increases the formation of the protective C2 hydroxyestrone^{lxv}

Use Spices that Inhibit NFkB, a switch that activates cancer genes

- NFkB is cancer's master switch, which activates more than 400 genes involved in tumour proliferation, survival, angiogenesis and invasiveness
- the triggers to activate NFkB are carcinogens, oxidation, viral infection, inflammation, radiation, chemotherapy and stress Clin Cancer Res Feb 15, 2007;13(4):1076-82

- the following spices inhibit NFkB: anise, basil, black pepper, caraway, cardamon, chili pepper, cinnamon, clove, coriander, cumin, fennel, fenugreek, flaxseed, garlic, ginger, Holy basil, lemongrass, licorice, mint, mustard seed, nutmeg, oregano, parsley, rosemary, saffron, tamarind, turmeric^{lxvi} Ann NY Acad Sci Dec 2001;1030:434-41

Use Antioxidant Rich Foods and Spices

Legumes: small red bean, kidney bean, pinto bean, black bean, navy bean

Berries: blueberry, raspberry, strawberry, cranberry, blackberry, goji

Tree Fruit: apple, cherry, plum, pear, orange

Nuts: pecan, Macadamia, walnut

- Spices and herbs also contain high amounts of anti-oxidants. The richest of these, in descending order, out of 425 tested, are cloves, peppermint, allspice, cinnamon, oregano, thyme, sage, rosemary and saffron.^{lxvii}
- Chai tea and rosemary or sage tea make a great addition to our diets.
- Other foods rich in antioxidants include raw cacao powder, amla (Indian gooseberry), white tea, green tea and dark chocolate (unsweetened of course).

Use Pomegranate

- Pomegranate extracts have shown to prevent proliferation of stem cells and can cause apoptosis (cell death) in breast cancer cells, as well as reducing angiogenesis (blood supply)
- Pomegranate extracts contain ellagic acid, ursolic acid and luteolin, which all reduce cell proliferation and can act as aromatase inhibitors Nutr Rev 2010 Feb;68(2):122-8
- pomegranate extracts are strongest when fermented; have a synergistic effect with soy J Med Food 2005 Winter;8(4):469-75
- pomegranate seed oil contains punicic acid, which inhibits ER+ and ER- breast cancer cells in a laboratory setting by > 90% Int J Onc 2010 Feb;36(2):421-6
- use organic cold-pressed oil for breast massage

Rotate Your Foods

- when we eat the same foods day after day we can develop sensitivities to them which may result in weakened immunity.
- Brewer's and bakers yeast, eggs, sugar, peanuts, citrus, corn and tomatoes. Tofu and soy products can also provoke sensitivities in some people.
- prepare a diet plan where you attempt to eat a particular food only once every 5 days, with the exception of the "fabulous five" phytoestrogens, the Brassicas and garlic
- rotate your grains and beans.

Practice intermittent fasting one day a week, consuming less than 500 calories during that one day

- this resets IGF-1 and insulin to normal levels
- three studies demonstrated intermittent fasting and chronic caloric reduction to be equivalent for weight loss
- intermittent fasting can reduce visceral fat stores, insulin-like growth factor 1 (IGF-1) levels and cell proliferation, and increase insulin sensitivity and adiponectin levels^{lxviii}

The Healthy Breast Diet

On rising

green drink - either 1-3 tsp. Greens + , Pure Synergy, Barley Green, spirulina or other green powder in water or 1-3 ounces of wheatgrass juice followed by 2 glasses filtered or spring water, with a little lemon or lime juice added plus a pinch of cayenne pepper

Breakfast

1 cup low glycemic cereal (use barley, bran, buckwheat, quinoa, amaranth) with 2-3 tbsp. freshly ground flaxseeds, ½ tsp cinnamon, 1 tbsp. wheat bran (if tolerated), berries, plus 1/2-1 cup soymilk or green smoothie or scrambled tofu or bean dish

Snack

2 cups fresh vegetable juice especially carrot, beet, kale, spinach or cabbage; add flaxseed, dulse or kelp or 1-2 pieces fruit, especially, cherries, apple, pear, ½ banana, orange, tangerine, berries, pomegranate
2 glasses filtered or spring water or herbal tea (green tea, licorice, rosemary, Greek sage, red clover, fenugreek, Pau d'arco, mint, dandelion, rosehip, yogi tea/chai)

Lunch

1-2 cups green salad with cabbage (eaten at the beginning of the meal), add pomegranate seeds, Goji berries
3/4 cup vegetables (at least 50% raw, including 1/2 cup Brassicas)
1/2 cup mung bean, red clover, sunflower or broccoli sprouts (in salad or in bean and rice dish)
1-2 tbsp. flaxseed oil, as salad dressing, and over beans and grain
1/2-1 cup beans, with turmeric, onion and garlic (hummus, bean dips, bean soup, or bean and grain dish)
½ cup whole grain (rice, millet, barley, quinoa, buckwheat)
3-4 shitake mushrooms

Snack

1-2 tablespoons raw almonds, pumpkin seeds, soy nuts and/or sunflower seeds with Goji berries
2 cups vegetable juice (especially carrot, beet, cabbage, dulse powder with added watercress, parsley, kale, mustard greens, garlic, ginger, sprouts, dandelion greens, or apple)
2 glasses filtered or spring water or herbal tea, as above

Dinner

green drink (as before breakfast, taken 1/2 hour before dinner)
1 cup salad with fresh sprouts (red clover, sunflower, mung bean or broccoli sprouts), onions and garlic, raw sunflower or pumpkin seeds, goji berries, pomegranate seeds, and grated citrus peel
1/2 cup firm organic tofu
½ cup whole grains (wild rice, quinoa, millet, rice, barley, and buckwheat) - omit this if you are food combining or wanting to lose weight
3/4 cup vegetables, raw or lightly steamed
2 tbsp. sea vegetables (hiziki, arame, wakame, nori, dulse, kelp)
1-2 tbsp. flaxseed oil and 1 tablespoon olive oil as part of salad dressing or over grain or vegetables

Snack

2 glasses filtered or spring water or decaffeinated green tea
1 cup Healthy Breast Drink (1 cup organic soy milk, 1 tsp. turmeric paste)

14-Day Dietary Routine

From (date)

to

Daily Food (Check Daily)	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Rosemary, Greek Sage, Thyme														
Vegetarian Diet														
Organic Food : fill in what %														
Raw Food : 50% or more														
Broccoli Sprouts (use daily)														
Mung Bean Sprouts (3 x weekly)														
Red Clover Sprouts (3 x weekly)														
Dandelion in season (3 x weekly)														
Vegetable Juice: 2 or more														
Cabbage: 1/3, juiced or raw														
Tomato Products (2 x weekly)														
Fruits: 2 or more														
Goji Berries (1/3 – 1 cup)														
Pomegranate														
Citrus Juice: organic (3x weekly)														
Vegetables: 4 or more servings														
Brassica Family: 1 cup														
Onion: 1														
Garlic: 2 cloves, raw is better														
Sea Vegetables: 1/3 cup														
Mekabu Seaweed (3x weekly)														
Shitake Mushrooms (2 x weekly)														
Low Salt/High Potassium														
< 15 % saturated fat/ tot. calories														
Flaxseed Oil: 2 or more tbsp														
Olive Oil for cooking, low heat														
Fiber: 30 g														
Whole Grains: 1 cup														
Beans: 1-2 cups daily														
Flaxseeds: 2-4 tbsp, ground														
Pumpkin Seeds: 2 tbsp, raw														
Wheat Bran: 1 tbsp														
Protein: 30-60 g daily														
Tofu: ½ cup														
Soy Milk: 1 cup														
Miso: 1 tbsp (3 x weekly)														
Citrus Peel: 1 tsp organic grated														
Turmeric: 1-2 tsp powder														
Rosemary, Sage, Thyme, Ginger														
Water: 8 glasses filtered														
Alcoholic Drinks: < 2 /week														
Coffee: none														

Sugar: none																				
Canned or Processed Food: none																				
Dairy: none																				

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